

**HECB 2000 MASTER PLAN FOR HIGHER EDUCATION:
Final Report on the Comprehensive Review of
Enrollment Goals and Capital Assumptions**

**Washington State
Higher Education Coordinating Board**

February 2001



Higher Education Coordinating Board

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EXECUTIVE SUMMARY

INTRODUCTION

Every four years, the Higher Education Coordinating Board (HECB) is directed under state law to prepare a Master Plan that assesses the state's higher education needs and recommends enrollment and other policies to meet those needs. The most recent Master Plan was presented to the 2000 Legislature and adopted on March 9, 2000 (Senate Concurrent Resolution 8425). This plan estimated the need to fund an additional 52,500 enrollments at Washington's public universities and colleges by 2010. Additionally, the plan provided estimates of the operating and capital budget needs to support this level of enrollment growth.

Recognizing that this enrollment goal posed a significant financial challenge, in terms of both operating and capital budgets, the Legislature asked the HECB to conduct a comprehensive review of the methods and assumptions underlying these estimates. The HECB undertook this review in collaboration with representatives of the public and independent sectors of higher education, staff of the Legislature, representatives of the Governor's Office of Financial Management (OFM), and other interested parties.

This report presents the findings of that review. It is organized as follows:

- This **Executive Summary** which summarizes the scope, key findings and lessons learned during the comprehensive review.
- A **list of team members** involved in the comprehensive review.
- A series of **discussion sections** dealing with:
 1. Enrollment Forecasting Methodology (Section A)
 2. 1999-2001 Enrollment Trends (Section B)
 3. Economic Effects on Enrollment Forecasts (Section C)
 4. The Relationship of Enrollment to Education Policies (Section D)
 5. Demographic Effects on Enrollment Behavior and Forecasts (Section E)

THE 2000 MASTER PLAN FOR HIGHER EDUCATION

The Master Plan described three components of change by 2010 in the level of student enrollment at colleges and universities in Washington:

- To maintain the current rate of service to a growing population, the plan recommended the state add 36,300 average annual full-time enrollment slots (FTEs) in the public colleges and universities between 2001 and 2010. These enrollment openings would be in addition to the 209,000 FTEs supported by the state during the 2000-2001 academic year. About 75 percent of these enrollments would be for lower-division instruction at the public colleges and universities. These additional enrollments are not necessarily a projected increase in student demand. Rather, they represent the additional FTEs needed to maintain current rates of participation as the size of the student-age population grows.
- To extend the opportunity for a greater share of students to receive upper division, graduate and professional instruction, the Master Plan recommended adding an additional 16,200 FTEs during the decade (above the 36,300 needed to maintain the current participation rate). This increase, the Board estimates, would enable Washington to reach the national average for participation in upper-division education by the end of the next decade. As of 1997, Washington ranked 46th nationally in the percentage of adults who were receiving upper-division instruction, according to calculations by the HECB and OFM.
- The Master Plan also identified 18,400 additional non-state supported enrollments that are projected to be added through 2010, at the independent colleges and universities and private career schools (13,500 FTEs), and through increased self-supported enrollments (4,900 FTEs) at the public institutions.

The Master Plan recommendations were supported by business organizations, students and others who cited Washington's rapidly growing need for highly trained teachers, health care professionals and information technology specialists, many of whom require bachelor's degrees or advanced instruction. The HECB had extensive conversations with business representatives, college and university leaders, and citizens, in an effort to align the enrollment recommendations with the needs and opportunities presented by Washington's fast-growing economy and increasing population.

The Legislative Response to the Master Plan

The prospect of providing appropriations to support 52,500 new publicly funded college enrollments by 2010 represents a serious financial challenge to Washington State. Thus, the Legislature sought to receive more information about these enrollment goals.

In its resolution accepting the Master Plan (Senate Concurrent Resolution 8425), the Legislature included directives for the HECB to re-examine its enrollment and capital assumptions, to contemplate various growth scenarios, and to examine alternatives to address the identified budget needs. The HECB also

was to further examine the role of the community and technical colleges in meeting the state's long-term needs.

Lawmakers directed the HECB to address these tasks in collaboration with the Office of Financial Management, and the public and independent two-year and four-year colleges and universities, private vocational schools, and appropriate legislative committees. Ultimately, more than 60 people participated in the re-examination process including staff from the Legislature, OFM, the State Board for Community and Technical Colleges, the Workforce Training and Education Coordinating Board, the Council of Presidents, the Washington Association of Independent Colleges and Universities, and the state's individual higher education institutions.

Key Findings from the Master Plan Capital Re-examination

The HECB staff and representatives of colleges and universities reviewed several of the planning standards used in the 2000 Master Plan to estimate the long-term capital cost of increased public higher education enrollments, including methods of estimating capital space needs and the projected costs of serving additional students by 2010.

The review group concluded that the long-range (2000-2010) estimates of facility and capital needs presented in the 2000 Master Plan represented reasonable projections. The group agreed that these types of long-term estimates would be refined as specific capital projects were planned and executed.

The Board adopted the work group's findings in July 2000. Among the group's conclusions were the following:

- While the actual future costs of accommodating additional students can be precisely estimated only on a project-by-project basis, the Master Plan provides an "order of magnitude" analysis of future higher education capital needs.
- The consensus of the group was that the planning standards used in the Master Plan represented a reasonable basis for arriving at an estimate of space and capital needs associated with enrollment growth through 2010.
- Some work group members felt the higher space utilization goals in the Master Plan would be difficult to achieve, while others felt the same goals were not challenging enough and that greater efficiencies should be sought. Similarly, some felt the Board's goal for expanded e-learning (defined as all uses of technology for instruction including distance learning, web-based instruction, online instruction, interactive video and pre-recorded media) was quite easily attainable, while others were uncertain about the implications of increased e-learning on space needs and facility use.

- Throughout its discussions, the work group also advised the HECB staff on the development of a single, prioritized ranking method for HECB capital budget recommendations for the 2001-03 Biennium.

Key Findings from the Master Plan Enrollment Re-examination

The re-assessment of the enrollment projections used in the Master Plan produced a number of findings about long-term influences on higher education enrollment, which are described in this section. Section B presents the findings related to enrollment patterns during the 1999-2000 academic year and preliminary information about fall 2000 enrollments.

The review group concluded that growth in overall enrollment demand was a practical certainty. Based on the past fifteen years of actual growth in enrollment trends, the growing population of the State, and the changing nature of the state's population, a consensus among higher education planners emerged which predicts a growing demand for enrollment at Washington's institutions of higher education. At issue is the amount of growth, the rate at which it will occur, and where this increased demand will occur.

Long-term findings include the following:

- Population growth and characteristics are the primary driver of higher education enrollment levels. OFM periodically updates its analysis of the age and gender makeup of Washington's population and the number of enrollments required to maintain the current level of opportunity. Since the HECB Master Plan was released, OFM has released new calculations based on recent participation levels and a revised population forecast. In the update released January 19, 2001, OFM projects an increase of 33,600 FTEs would be needed by 2010 to maintain current rates of opportunity. This is about 2,700 FTEs below the 36,300 projection that was included in the HECB Master Plan. For the purpose of clarity, all comparisons in this document to the projected enrollment level to maintain current rates of opportunity will refer to the 36,300 projection contained in the HECB 2000 Master Plan – not to subsequent revisions.
- Many forces may increase the demand for higher education enrollment during the decade leading to 2010, beyond the level needed to maintain the current service level. These include (1) factors related to the state's economy; (2) the growth and demographic characteristics of the population; and (3) specific policies pursued by the Legislature and Governor. Work groups convened for this project examined these factors, and their findings are summarized in the attached sections.
- Several forces might decrease demand for public higher education in Washington. These could include student decisions to pursue job opportunities rather than continued education in the state's fast-growing economy; tuition and financial aid policies that significantly increase the net cost to students of a college education; or significant, unexpected increases in enrollment in programs offered by non-public providers. However, these factors are very difficult to forecast and are not expected to have as significant an impact on statewide enrollment patterns as do major demographic forces such as the size and age of the population.
- This project has prompted renewed scrutiny of the role of the community and technical colleges in meeting Washington's education and job training needs. This role is critical – and expanding each year. The state should consider increasing enrollments beyond the “carry-forward” level by 2010, for job-related instruction in the two-year system, as well as for baccalaureate and advanced degree programs whose graduates are in demand among employers. In addition, many immigrants will need

expanded access to the English as a Second Language program provided through the two-year colleges. Evidence of demand for two-year programs is provided by the fact that community and technical colleges have enrolled more students than budgeted in FY 2000, and this is expected to continue in FY 2001. Also, 5,000 of the 6,594 (revised) new enrollments recommended by the HECB for the 2001-2003 Biennium are for the community and technical colleges. In the short term, enrollment pressure within the public higher education system appears likely to be greatest at the community and technical colleges located in urban and suburban areas.

- While higher education enrollment is expected to increase significantly by 2010, this increase will not manifest itself in a “straight-line” progression. Currently, enrollments appear to be increasing more slowly in the baccalaureate institutions than they will later in the decade. In fact, enrollment at two of the public baccalaureate institutions was below the budgeted level during 1999-2000, a trend that appears to be continuing in the current academic year. It is reasonable to expect relatively slow enrollment growth at the baccalaureate institutions in the next two years, coupled with somewhat faster increases in the community and technical colleges. It is important to note that long-term enrollment forecasts are regularly revised, and are not intended to predict short-term changes in student behavior.
- Throughout all the discussion of enrollment options and alternatives, it is also important to recognize that higher education enrollment continues to increase substantially each year. During the 1999-2000 academic year, enrollment increased by over 4,600 (3,829 at community and technical colleges and 787 at baccalaureates). OFM projections, based on fall 2000 actual enrollments and historical patterns for the remainder of FY 2001, indicate the baccalaureate colleges and universities will add more than 1,900 FTE students, and will be within two-thirds of 1 percent of budgeted enrollment. The community and technical colleges are expected to add about 2,300 FTEs in FY 2001, and be above their budgeted level.

THE ENROLLMENT FORECASTING PROCESS: LESSONS LEARNED

The HECB's re-examination of the components of the 2000 Master Plan used a “building block” approach to review the enrollment projections. This review started with OFM's projection of enrollment needed to maintain the current rate of opportunity (called the Current Participation Rate). This is defined as the number (headcount) of students divided by total state population age 17 and above. Additional “building blocks” discussed were demographic, economic and policy variables that may affect future enrollment levels.

The process revealed, or re-emphasized, a number of important observations about the challenges and pitfalls of the business of forecasting college and university enrollment. For example:

- OFM's projections of the enrollment increases needed to maintain the current rate of opportunity (current participation rate) are based solely on demographic factors – the age and gender makeup of the population – that are calculated by OFM. These estimates will be revised over time as demographic data changes.

- While demographics will remain the primary driver of overall enrollment levels, economic fluctuations or state policy initiatives can produce significant short-term effects. In addition, notwithstanding the best efforts of institutions, there are aspects of student decision-making that cannot be forecast or controlled. Student behavior is likely to continue to confound the best projections in the short term, but demographics will determine enrollment levels over the long-term.
- The state faces a choice about how to prepare for the enrollment increases that are forecast during the decade: by planning to expand physical and program capacity, or by waiting for a demonstration of demand by students that exceeds the capacity of institutions. The HECB recommends the first approach, rather than placing the state in a reactive mode in which it will be more difficult to meet the needs of students, communities or institutions.

ENROLLMENT TRENDS IN 1999-2000

As part of the Master Plan re-examination, the HECB and its partners spent considerable time studying the public colleges and universities' enrollment experience in 1999-2000. This information has been augmented by new data from fall 2000 enrollments. There are several key findings:

- Higher education enrollment increased substantially in the 1999-2000 academic year, but it did not increase as much as planned. The baccalaureate institutions were within two-thirds of 1 percent of budgeted enrollment levels, and the community and technical colleges over-enrolled by almost 4 percent.
- Community and technical college enrollments were strong in 1999-2000, and remained so last fall at most campuses. Various factors, such as college efforts to expand technical job training, and rapidly increasing demand for English as a Second Language courses are likely to drive community and technical college enrollment increases higher than the 20,900 FTEs called for in the Master Plan.
- The public institutions have taken corrective action in response to the 1999-2000 academic year enrollment experience, and successfully dealt with two of the three identified causes of under-enrollment at the two baccalaureate institutions: the rate of enrollment of recent high school graduates, and the average course load for students. The third cause of under-enrollment, a lower-than-expected number of transfer students, appears to be continuing during fall 2000 at some universities.
- All of the public institutions are actively reaching out to prospective students and are collaborating on a major outreach initiative proposed for funding in the 2001-2003 Biennium. These efforts are more likely to affect long-term enrollment patterns than to alter prospective students' decisions in the next year or two.

NEXT STEPS

Even though this report completes the formal work assignment of the study team, the Higher Education Coordinating Board will continue to discuss with all interested parties any issues and new information that is developed regarding enrollment levels and behavior. HECB staff will report to the Board actual enrollment levels for each academic term compared to budget plans. Data and analyses that are developed by institutions or other interested parties will also be reported to the Board and state decision-makers.

THE COMPREHENSIVE REVIEW TEAM

To complete this re-examination, a total of 11 large meetings and numerous smaller gatherings and conversations have occurred since the end of the legislative session. The following people attended various meetings and discussions:

SBCTC: Scott Morgan, Loretta Seppanen,
Sandy Wall, Jan Yoshiwara
LEG: Karen Barrett/Senate Ways &
Means
Jack Daray/House Appropriations
Mike Groesch/Senate Ways & Means
Erika Prager/House Higher Ed.
Bill Robinson/House Capital
Jean Six/Senate Higher Ed.
OFM: Irv Lefberg, Wolfgang Opitz,
Pat Tasanasanta, Theo Yu,
Sarah Corrie, Ta-Win Lin,
Theresa Lowe
COP: Terry Teale, Carolyn Sundby,
Cindy Flynn
WTECB: John Bauer, Bryan Wilson
WAICU: Violet Boyer, Tom Parker,
Ron Urban (Whitman College)
CASELOAD FORECASTING COUNCIL:
John Steiger
EMPLOYMENT SECURITY DEPT:
Gary Kamimura

HECB: Evelyn Hawkins, Jim Reed,
John Fricke, Dan Keller,
Kathy Raudenbush, Linda LaMar,
Marty Harding, Parker Lindner,
Patty Mosqueda, Tom Weko,
Whitney DalBalcon, Bruce Botka,
Linda Schactler
UW: Fred Campbell, Debra Friedman,
Harlan Patterson, Tim Washburn, John
Swiney
WSU: Larry Ganders, Rom Markin,
Jim Rimpau, Karl Boehmke
CWU: Greg Chan, David Dauwalder,
Martha Lindley, Mark Lundgren, Mike
Reilly
EWU: Peter Dual, Mary Voves,
George Durrie, Carol Terry
WWU: George Pierce, Judy McNickle,
Andrew Bodman, Jack Cooley
TESC: Ruta Fanning, Steve Hunter,
Barbara Smith, Steve Trotter,
Kim Merriman

SECTION A

ENROLLMENT FORECASTING METHODOLOGY

The Baseline: 2000 Master Plan Enrollment Forecast

The 2000 HECB Master Plan set out enrollment goals for the state for the year 2010. From a state policy perspective, these goals for state-funded students at public institutions consist of two elements:

1. An increase of 36,300 average annual full-time enrollments (FTEs) at all levels by 2010, to maintain the current rate of participation, and
2. An increase of 16,200 upper-division/graduate/professional FTEs to provide opportunity for a greater proportion of students to continue their education and develop the skills they will need to participate at the highest levels of the state's economy.

Building a bridge of understanding between the enrollment goals laid out in the HECB 2000 Master Plan and this final report will be aided by a discussion of some concepts and assumptions that underlie the goals. Traditionally, enrollment levels have been viewed in terms of "participation rate" – the number of post-secondary students (part-time and full-time) divided by the population aged 17 and above. This approach is practical, because data exist that allow us to readily compare Washington State with all the other states. The following rankings include public and private institution enrollments from 1997; the most recent year for which data is available:

1. Overall, state residents participate in public and private post-secondary education at a rate that places Washington 19th among the 50 states.
2. A particularly strong community and technical college system with a wide-ranging mission and an open-door enrollment policy places Washington 8th among states in total lower-division participation.
3. But, Washington ranks 46th among states at the upper-division/graduate/professional level.

In short, all the institutions (and particularly the community and technical colleges) are providing outstanding opportunity for state residents to achieve their educational goals through the lower division level. But the Master Plan expresses the goal that the state can and should do more to expand enrollment opportunities for students who want to pursue education goals at the upper-division level and beyond. The HECB considers this particularly important in a state that has a significant vacancy rate in information technology jobs and in other sectors of the economy.

This state has a history of importing highly skilled (and highly paid) workers to fill the fast growing hiring needs of employers. The HECB has proposed that more opportunity be provided to state residents to obtain the education and skills necessary for these jobs. Washington business strongly supports the expansion of education opportunity at all levels to provide the trained workforce that is required for continued growth and prosperity.

The HECB approached the creation of the Master Plan enrollment goal by looking at equity and opportunity for citizens. The Board believes the state should provide a level of opportunity to residents that is commensurate with what residents of other states enjoy. But, other approaches to developing enrollment goals do exist. The Workforce Training and Education Coordinating Board (WTECB) attempts to measure a “skills gap” – the unfilled demand for educated workers – and the resulting lower-division goal is much higher than that cited in the Master Plan. The State Board for Community and Technical Colleges analyzes projected enrollment increases by balancing the capacity of the colleges and the level of resources expected to be available. Both these approaches are valid and add insight to the discussion about enrollment goals.

The Re-Examination Method: The Building Block Approach to Enrollment Analysis

The analytical approach adopted by the HECB to undertake this Master Plan enrollment re-examination used “building blocks” to explain various components of the enrollment estimate. The purpose of the building-block approach is clarity; it allows the effect of each of several separate factors to be identified and discussed separately.

First Building Block: Current Rate of Opportunity

The baseline or first building block is OFM’s projection of the average annual FTE level required to maintain the current *rate* of opportunity (current service level) for a growing population. This is measured by holding constant the proportion of the state population receiving instruction at in-state public institutions, and calculating the increases in enrollment to educate that same proportion of a growing population. This baseline is adopted because maintaining the current level of opportunity is a value that is held as a top priority among the public, students, business, and decision-makers. *No participant in Master Plan enrollment assumptions reassessment has recommended reducing the opportunity for students to receive post-secondary education below current levels as an option to be considered.*

To calculate this baseline, OFM looks at the changing age and gender distribution of the state population over the next ten years, assumes that college-going behavior and all other policies and variables are held constant, and calculates what average annual enrollments might be in 2010. This exclusively population-based enrollment projection explicitly assumes that the future will look just like the present – except for the size, gender, and age distribution of the state's population. Similarly, it assumes all other factors such as the aspirations of the state's population, demands of the economy, state policies, etc. will look the same in 2010 as they do today. Since this is not the case, other major factors that will shape enrollment

demand should also be considered. However, creating this baseline is helpful since it shows how enrollments might increase in order to serve a growing population – if no other factors are considered and no other policy choices are made.

It is important to clarify the utility of the participation rate calculation provided by OFM. Such a calculation takes into account the state's entire current student body and the entire potentially eligible population that could be enrolled. It encompasses many variables that have manifested themselves in current enrollment practices, and projects them into the future. Therefore, it does take into account variables, behaviors, and policies that have developed over time and are embedded in current experience. For example, recent economic conditions and current student demographics, tuition and financial aid policies, and outreach and retention efforts are all included in current enrollment measurements. Therefore, the participation rate approach does provide a solid basis for examining the potential effects of new or different variables and policy choices as an increment above or below the continuation of current experience.

In the year since this participation-rate calculation was made for the HECB 2000 Master Plan, OFM has developed new data and population projections upon which to base a revised calculation. This recalculation is an important part of the re-examination instructed by the Legislature. **OFM released the most recent update of this calculation on January 19, 2001, which projects an increase of 33,600 FTEs by 2010 to maintain current rates of participation. This is compared with the projection of 36,300 made when the Master Plan was published, a reduction of about 2,700 over the ten year period. OFM's projection of the proportional split of these new FTEs between the community and technical colleges and the baccalaureate institutions is virtually the same as the proportions calculated for the Master Plan.**

Additional Building Blocks: Considering Variables and Policy Choices

Separate from the baseline projection is a discussion of other variables and policy choices that might affect these enrollment levels over time. Last spring, the HECB, colleges and universities, and other organizations worked together to identify, define, and quantify (where possible) the most significant variables and policy choices expected to affect enrollments. These factors cover the areas that were discussed in the legislative consideration of the Master Plan goals. The variables and policy choices were separated into three general areas:

- Economic effects;
- Policy influences; and,
- Demographic effects.

The study team selected variables and policy choices for analysis representing the most significant factors that may affect publicly funded enrollments. In some cases, little is known about what the future holds; quantifying the enrollment impact of various alternatives cannot be done with precision. Still, it is

important to recognize the variables and policy choices that are discussed, and monitor them over time so that we can learn more about their effects.

Sections C-E of this document provide a detailed discussion of each of the variables and policy choices. These detailed discussions describe the variable or policy choice, identify its parameters and some options, and quantify (where possible) the enrollment effects of each of the identified options. While each of the variables or policy choices identified is presented and discussed separately, these variables and policy choices are inter-connected and related in many ways.

Data Limitations: An Example Related to High School Graduates

Inherent in all of the previous discussions of participation rate calculations and the analysis of building blocks is the presumption that reliable data is available to use. Unfortunately, this is often not the case. The Study Team consistently found the situation where data to answer a question or make a projection is either outdated, unreliable or in a form that does not promote confidence in the calculation. This will continue to be a challenge in the subsequent discussions of demographic/behavioral and economic issues.

An example of these data issues is the monitoring and projection of new college freshmen that are recent high school graduates. One would assume the number of high school graduates is a relatively easy data point to obtain, and projecting high school graduates over the next few years would be straightforward since these students are already in high school. Such is not the case.

First, the Superintendent of Public Instruction updates high school graduate counts on a delayed basis. At the moment, the latest available information is the number of graduates in spring 1998.

More important, there are a number of questions regarding patterns emerging in the projections of high school graduates. OFM updates these estimates every two years and combines estimates of resident students progressing through the system with expected in-migration of students. Over the last ten years, there is a consistent pattern that each updated estimate drops the number of projected high school graduates for virtually all future years (with the 1996 estimate as an exception). Discussions with OFM indicate this is the result of downward revision in the in-migration estimates. Clearly, in-migration estimates may be volatile since they are affected by the relative economic and job prospects in other states as compared to Washington – which is constantly changing.

However, it seems the rate of enrollment by recent high school graduates in baccalaureate institutions is increasing. This leaves us with a series of unanswerable questions because we do not have data to address them:

1. Will fluctuations in in-migration cause the number of high school graduates to grow at faster or slower rates? Will the trend of consistently decreasing graduate estimates continue, or reverse?
2. Is the percentage of recent high school graduates going directly to baccalaureate institutions changing, and how?

3. If the pool of high school graduates will be smaller in future years, what effect will that have on the number of transfer students?
4. Is there an east/west geographic implication of a smaller pool of high school graduates seeking college since some west side institutions seem to be accepting and enrolling higher percentages of applicants?

These, and other questions, are very important to answer and can affect both the calculation of current participation rates and the establishment of enrollment goals. However, the ability to address these questions is hampered by the age and type of data available.

The Outlook for Enrollment Forecasting in the Future

During its discussions, it became clear to the study team that the process of estimating and monitoring enrollment levels will become more significant in the future. The state's tightening financial situation is only one of the factors contributing to this trend. The changing face of institutions, technology, program needs, student expectations and needs, delivery modes, alternative providers, etc. require that enrollment planning receive continual attention by institutions and state decision-makers. Simply relying on past trends will no longer suffice. There is much to be learned and lessons to be shared among the interested organizations. As part of the HECB's interest in monitoring progress on master plan goals, HECB staff will work on an ongoing basis with the institutions and others to develop, monitor and report new information and understanding regarding enrollment issues. Staff will report to the Board actual enrollment levels for each academic term compared to budget plans. Data and analyses that are developed by institutions or other interested parties will also be reported to the Board and state decision-makers.

SECTION B

1999-2001 ENROLLMENT TRENDS

Summary

As part of the Master Plan re-examination, the review group spent considerable time studying the public colleges and universities' enrollment experience in 1999-2000. This information has been augmented by new data from fall 2000 enrollments. There are several key findings:

- Higher education enrollment increased substantially in the 1999-2000 academic year, but it did not increase as much as planned. The baccalaureate institutions were within two-thirds of 1 percent of budgeted enrollment levels, and the community and technical colleges over-enrolled by almost 4 percent.
- Community and technical college enrollments were strong in 1999-2000, and remain so this fall at most campuses. Various factors, such as the colleges' efforts to expand technical job training and rapidly increasing demand for English as a Second Language courses, are likely to drive community and technical college enrollment increases higher than the 20,900 FTEs by 2010 called for in the Master Plan.
- The public institutions have taken corrective action in response to the 1999-2000 academic year enrollment experience, and successfully dealt with two of the three identified causes of under-enrollment at the two baccalaureate institutions: the rate of enrollment of recent high school graduates, and the average course load for students. The third cause of under-enrollment, a lower-than-expected number of transfer students, appears to be continuing during fall 2000 at some universities.
- All of the public institutions are actively reaching out to prospective students and are collaborating on a major outreach initiative proposed for funding in the 2001-2003 Biennium. These efforts are more likely to affect long-term enrollment patterns rather than alter prospective students' decisions in the next year or two.

Analysis of the 1999-2000 Enrollment Situation

During the 1999-2000 academic year, the baccalaureate colleges and universities added almost 800 FTE students and were within two-thirds of 1 percent of budgeted enrollment. The community and technical colleges added more than 3,800 FTEs and were nearly 4 percent over the budgeted level.

Academic Year 2000 baccalaureate enrollment numbers. OFM reported that enrollment in public four-year institutions fell short of budgeted levels by 549 annual average full-time equivalents for the 1999-2000 academic year. This means baccalaureate enrollment increased by 787 from the preceding year instead of the 1,325 that was budgeted. Enrollment still increased substantially over the preceding year.

The four-year institutions were within two-thirds of one percent of the budgeted level. At the same time, the community and technical colleges were “over-enrolled” by 4,602 – or almost 4 percent.

Factors that Reduced Fall 1999 Baccalaureate Enrollment Increases. The Study Team identified three factors affecting the 1999-2000 enrollment situation in the baccalaureate institutions:

1. **An unanticipated change in student behavior.** In fall 1999, the average on-campus student at two baccalaureate institutions enrolled in slightly fewer credit hours, resulting in an unanticipated change in the conversion of student headcount into FTEs.¹ Reasons for this reduction seem to be:
 - more strict monitoring by the registrar of course pre-requisites resulting in enrollment cancellations;
 - introduction of freshman courses that carried fewer credits than the courses they replaced; and,
 - more students entering as freshmen with previously earned college credit, and taking fewer classes as a result.
2. **Fewer high school graduates entered baccalaureate institutions.** Fewer Washington high school graduates enrolled in baccalaureate institutions in fall 1999 than in fall 1998, even though the number of high school graduates increased by more than 2,000. Typically, baccalaureate institutions enroll about one of every six new high school graduates. Thus, an increase of 2,000 graduates would be expected to increase baccalaureate entrance by over 300, rather than to decline by 97, as occurred in fall 1999. This situation was not anticipated.

Although data are limited and not always current, it does not appear that these students entered the workforce, attended a community college, or attended an independent in-state or out-of-state college. The best test of whether this experience will recur is to examine fall 2000 freshmen acceptances and deposits.

The Workforce

Finding data about how many students choose to enter the workforce directly after high school is difficult. One could assume that the healthy economy and availability of jobs might entice some potential students to defer their education in favor of work. The Office of Superintendent of Public Instruction and the HECB have jointly supported follow up studies of high school graduate competencies and choices. The most recent Graduate Follow-up Study, completed in April 2000, provides us with some data on the work/education choices of spring 1998 high school graduates. Approximately 2 percent fewer high school graduates went directly to work compared to spring 1997. While this is not a definitive answer regarding the behavior of spring 1999 graduates, the

¹ At WSU, the fall 1998 average on-campus Pullman student enrolled in 15.00 credit hours. In fall 1999, the average on-campus student enrolled in 14.83 credit hours, resulting in a campus-wide reduction of 150 FTEs given the same number of students.

economy has been healthy across the entire three-year span so a marked increase in the number of high school graduates entering the workforce in 1999 seems unlikely.

In-state public post-secondary institutions

Students may enroll in either community colleges or baccalaureate institutions. According to SBCTC data, the 1999 enrollment of new high school graduates in community colleges does not indicate a higher rate of community college attendance. Thus, it seems that students who did not attend the baccalaureate institutions did not choose to enroll instead in the community colleges.

Non-public or out-of-state post-secondary institutions

If the additional high school graduates did not work or attend Washington public institutions at the same rates as in previous years, an obvious alternative is attendance in non-public or out-of-state institutions. However, this is very difficult to substantiate. In addition to traditional private institutions, there is a proliferation of electronic alternatives to obtain either skill development or to pursue a degree or certificate. There is no good source for data about the number of electronic students since technology has now removed traditional geographic boundaries.

3. **Fewer transfer students entered baccalaureate institutions.** The third major factor behind lower-than-budgeted baccalaureate enrollment was a reduction in the number of transfer students. In fall 1999, 705 fewer FTE students transferred to baccalaureate institutions than in fall 1998. Transfers from Washington institutions were down 850, and transfers from out-of-state institutions were up 145. Institutions had expected an increase rather than a decrease in the number of transfer students from Washington institutions since the number of transfer-ready students continues to grow. The flow of these transfers did improve in the remainder of the 1999-2000 academic year; the increase for the entire year was only 1.5 percent (138 FTE students) less than expected.

The community and technical colleges and baccalaureate institutions are examining how transfer students make their choices, and what can be done to assist these students to make efficient progress toward their goals. Transfer experience from the community colleges to baccalaureate institutions differs among the institutions. According to SBCTC data, community college transfers for FY 2000 compared to FY 1999, were: up at the University of Washington (5 percent), Western Washington University (19 percent), and Eastern Washington University (8 percent); and down at The Evergreen State College (1 percent), Central Washington University (8 percent), and Washington State University (23 percent).

Analyzing the reduction in transfers among the baccalaureate institutions is a more complicated matter. Some of the same considerations clearly apply: students may choose to enter the work force or delay additional education, or they may choose not to relocate to another campus. However, the factors underlying a decision not to transfer among baccalaureate institutions may also be affected by choices of fields of study. Different baccalaureate institutions offer different programs, and the mix is constantly changing. In addition, branch campuses, extended learning centers and distance education opportunities are

growing and offering more programs every year. These factors may reduce the need for some students to transfer among baccalaureate institutions to obtain the program they desire. This is a positive outcome for the students.

Finally, the number of transfer students that come from any Washington public institution may decrease for one of the same reasons that high school graduates are making other choices – recruiting by private and out-of-state institutions. Potential transfer students are an attractive market for these private institutions.

To summarize, it appears the reduction in average course loads and the lower numbers of freshmen enrolling directly in baccalaureate institutions were new and unexpected circumstances, but can be readily measured. The public institutions have taken corrective actions to address these two factors and will monitor and report the results. The third factor, fewer transfer students, requires more study. Transfer behavior is more difficult to measure and understand. Institutions are aware of the change in transfer behavior and will be monitoring and reporting future experience.

Fall 2000 Preliminary Enrollment Experience

In total, data from tenth-day fall enrollments indicate the four-year institutions will be within two-tenths of one percent (170 FTEs below the 84,855 target) of budgeted enrollment, with some substantial variation above and below budgeted levels among the institutions. If historical patterns of enrollment changes over the remainder of the year hold true, OFM estimates the baccalaureate institutions will add about 1,900 new FTE students in FY 2001, compared to FY 2000.

However, four of the baccalaureate institutions indicate factors or plans that could increase or decrease average annual enrollment from the OFM estimates. In total, these changes would drop enrollment by about 50 annual average FTEs by the end of the year.

COMPARISON OF FY 2001 (BASED ON FALL 2000) BACCALAUREATE ENROLLMENT TO FY 2001 BUDGET AND FY 2000 ACTUAL

| | FY2000 <u>Actual</u> | FY2001 <u>(Fall 2000)</u> | Difference FY2001-00 | FY 2001 <u>Budget</u> | FY2001 <u>(Fall 2000)</u> | Difference Est-Budget |
|-------|-------------------------|------------------------------|---------------------------------------|--------------------------|------------------------------|--|
| CWU | 7,463 | 7,292 | -171 | 7,867 | 7,292 | -575 |
| EWU | 7,712 | 8,065 | +353 | 7,864 | 8,065 | +201 |
| TESC | 3,697 | 3,732 | +35 | 3,713 | 3,732 | +19 |
| UW | 34,058 | 34,832 | +774 | 34,688 | 34,832 | +144 |
| WSU | 19,008 | 19,495 | +487 | 19,872 | 19,495 | -377 |
| WWU | <u>10,841</u> | <u>11,304</u> | <u>+464</u> | <u>10,851</u> | <u>11,304</u> | <u>+453</u> |
| Total | 82,778 | 84,720 | +1,942 | 84,855 | 84,720 | -135 |

Note: Fall 2000 enrollment experience in the community and technical colleges indicates that FTE enrollment will continue to be well above the budgeted level of 123,762.

Following is a summary of individual four-year institution fall 2000 enrollment experience:

1. **Central Washington University:** Enrollment is below last year and below the budgeted level. CWU had a large class of graduating seniors in spring 2000, and planned to offset this with a large class of new freshmen. New freshmen numbers were below target, but the number of community college transfer and new graduate students actually declined. Transfers are down at Ellensburg and the west side centers, indicating the shortfall is not geographic in nature. CWU will be putting together a plan to invest in increasing enrollment of all types of students, and will be revising their enrollment budget request for the next biennium. CWU expects the average annual FTE will be 33 higher than the numbers in the table above.
2. **Eastern Washington University:** Enrollment is up from last year and above the budgeted level.
3. **The Evergreen State College:** Enrollment is above last year and slightly above the budgeted level.
4. **University of Washington:** Enrollment is well above last year and above the budgeted level. This is a combination of 296 additional FTE at the Seattle campus, while Bothell and Tacoma are 106 and 46 below the budgeted level, respectively. The Seattle campus has enrolled a large freshmen class, while the number of transfer students entering the branch campuses is lower than expected. UW expects both branch campuses to exceed these estimates: Tacoma by 29, and Bothell by 17.
5. **Washington State University:** Enrollment is up from last year, but below the budgeted level. This is a combination of 340 below at Pullman, 56 below at Spokane, 10 below at Vancouver, and 28 above at Tri-Cities. The shortfall is in all types of students: freshmen, transfer and continuing. WSU expects the shortfall at Spokane will be 31 rather than 56.
6. **Western Washington University:** Enrollment is well above last year, and well above the budgeted level. This includes a definitional correction that adds 180 FTEs to Western's enrollment to include student teachers. Western has enrolled the largest freshmen class in 101 years, sparked by a significant increase in the percentage of admitted students who enrolled. Western has also implemented a block scheduling approach this fall to increase physical capacity in an already highly utilized campus. WWU expects enrollment for the year to be 153 below the OFM estimate.

As was the case last year, actual enrollment experience is not offering a clear explanation of new or emerging trends in student choices or behavior.

- Two baccalaureate institutions did not meet budgeted levels, one is right on target, and three enrolled additional students.
- Geographic location is not an explanation since both west side UW branch campuses and CWU upper division centers are below budgeted levels, and EWU Cheney is above the budgeted level.
- Reversing last year's experience, average course loads have increased and are returning to historical levels. Institution efforts to improve advising and registration processes have been effective.
- The capture rate in baccalaureate institutions of recent high school graduates seems higher than last year. Preliminary data suggests the number of graduates was smaller than anticipated but the capture rate higher.
- The primary cause of the shortfall is fewer transfers, even though the number of transfer-ready students is increasing. This fall-off in transfers might be explained by the availability of attractive job opportunities, or by students going to other institutions (private, non-traditional, out-of-state) that we cannot track.

The institutions will be gathering and analyzing data on an ongoing basis regarding student choices and patterns in enrollment. As that analysis provides additional insights into enrollment behavior, and institutions develop plans to achieve budgeted enrollment levels, this information will be shared with decision-makers.

SECTION C

ECONOMIC EFFECTS ON ENROLLMENT FORECASTS

Introduction

What sort of enrollments will our system of postsecondary education need in the decade ahead to respond appropriately to the needs of Washington's economy? This question was disaggregated into three parts:

1. What fluctuations in the **business cycle** are likely to occur, and how will these influence enrollments in postsecondary education?
2. What sorts of **long-run, structural changes** are at work in our state's economy, and how do these shape the need for postsecondary enrollments in Washington?
3. In response to the demands and opportunities of an information economy, **new providers** of postsecondary education and training are flourishing. Traditional institutions of postsecondary education are responding to these new opportunities and competitors in creative ways. How will these developments shape the need for publicly funded postsecondary enrollments?

Summary of Findings

The **business cycle** does shape enrollments. Baccalaureate students are sensitive to the opportunity costs of attending public four-year institutions: to the jobs and wages they must often forego. Enrolling in a four-year institution becomes more attractive than participating in a job market when wages fall and employment is uncertain, and somewhat less attractive when a robust job market beckons. Hence, enrollments in public universities are countercyclical.

For students at community colleges, full-time work and schooling are more likely to be complementary. Rising incomes during periods of economic expansion allow these students to better afford the costs of college, work fewer hours, and take more credits. Economic recessions have the opposite effect. Thus, two-year enrollments behave in a nearly opposite fashion from four-year enrollments: they are positively linked to the business cycle.

To summarize, the business cycle will have modest short-term effects on enrollments. These effects will cause minor variations around the long-term trend of enrollments, a trend that is driven mainly by demographics.

The primary **long-term, structural force** at work in our state's economy is the increasing demand for

2008, will require a baccalaureate or advanced degree education, and that six in ten of the jobs in Washington will require more than one year of postsecondary training or education.

Although a growing share of Washington's workforce will need to be increasingly skilled, it is not entirely clear *who* will provide this training and education, or *how* it will be provided. This is a time of fundamental change in postsecondary education. National and even international learning opportunities are now available to Washington's students through distance education technologies. **New providers** of education and training, such as a burgeoning IT certification industry, provide learning opportunities previously unavailable to our state's students. Given the existence of these new avenues for study, population increases and labor market rewards may not produce the same enrollment demands in 2010 as they once did in 1980 or 1990; they will attenuate the impact of demographic and economic growth on publicly-funded enrollments. However, we are presently unable to reliably measure or estimate the scope of these learning opportunities, or quantify their impact on long-term enrollment trends.

In light of these developments, public postsecondary enrollments may need to grow faster than the maintenance of current opportunity to keep pace with the changing demands of our state's economy. Relying upon targeted investments in postsecondary vocational education – such as “high demand enrollment funding” – should help ensure that student demand for postsecondary enrollments is met.

The Business Cycle and Enrollments

How does the state's business cycle influence enrollments in public postsecondary education?

The business cycle exerts conflicting pressures on enrollments. A robust economy expands employment options, raising the opportunity costs of foregoing work to attend college. Predictably, some students will leave college or postpone enrollment to take the promising jobs that become plentiful in a buoyant economy. However, economic expansion also raises family incomes, making college more affordable. Students who are already working and struggling to afford college may be more likely to enroll, or to enroll in more courses, during periods when their family incomes are secure and rising. Rising incomes may even allow them to cut back on work hours and complete more college credits.

Thus, a rising economy will deter some students from enrolling by raising the opportunity costs of attending college and induce other students to enroll by bolstering their incomes. Students best able to take advantage of new job opportunities will be most responsive to the rising opportunity costs of attendance; students struggling to attend college or hoping to leave the labor market to complete a degree will be most affected by rising incomes. An economy falling into recession will have effects opposite of these.

The OFM Enrollment Forecasting Study

In January 1999, OFM prepared a study that explored alternatives to our state's current enrollment forecasting methodology, *Evaluation of Long-term Higher Education Enrollment Forecasting*. The findings of this study roughly conform to the expectations outlined above.

OFM developed a set of time-series models in which social and demographic conditions, economic factors, and policy conditions were the independent variables, and enrollment by headcount was the dependent variable. Based upon data from the years 1965-1997, these models show a link between the business cycle and postsecondary enrollments (by headcount) in Washington State.

The public four-year model shows that, all other factors held constant, each 1 percent increase in the wage of high school graduates ages 18-24 results in a decline of 226 headcount in four-year public institutions, and each 1 percent increase in unemployment yields an increase of 888 headcount in these institutions. It appears as if some students² are sensitive to the opportunity cost of attending public baccalaureate institutions. Enrolling in a four-year institution becomes more attractive than participating in a job market when wages fall and employment is uncertain, and somewhat less attractive when a robust job market beckons.

There is one significant qualification to this pattern: the influence of traded sector employment on enrollments. Traded sector employment includes manufacturing, civilian federal government, and producer services (services purchased by other businesses and government agencies): industries that produce output chiefly for out-of-state demand. Traded sector employment is used to measure “overall job growth in knowledge-intensive industry sectors.” The growth of knowledge-intensive employment is positively related to four-year enrollments. Even so, this behavior is consistent with students responding to opportunity costs. Employment in knowledge-intensive industries; e.g. working as an aerospace engineer, is frequently not a substitute for baccalaureate education. Rather, baccalaureate education is often a prerequisite to it.

Although state spending and the business cycle are correlated, the correlation between the two is modest and we can be confident that each exercises a separate influence on enrollment levels. In light of the model's results, we can conclude that four-year enrollments are counter-cyclical-enrollments increase in response to falling wages and employment.

Community college enrollments behave in a nearly opposite fashion. If we look at available data, all other things being equal, the presence of a recession reduced enrollments by 5,680 students. Increasing nonagricultural employment, in contrast, increased enrollments. Each 1 percent increase in our state's nonagricultural employment, other factors held constant, yielded a 4,132 headcount increase in enrollments. In sum, two-year enrollments are positively linked to the business cycle, rather than substantially countercyclical, as is the case for public four-year enrollments.³

Again, we may explain this pattern by turning to the decisions of students and the opportunity costs that confront them. It is difficult to be both a full-time participant in the labor market and a

² It is likely that transfer enrollments are most sensitive to the unemployment and wage changes, and that the enrollment decisions of traditional high school direct students are relatively less sensitive to these forces.

³ One should note that the dependent variable here is all Community and Technical College enrollments. The estimated impact of the business cycle might be different if one separated enrollments into type or purpose, such as basic education, vocational/ technical, and academic.

full-time student at a baccalaureate institution. Although the majority of baccalaureate students work, most do not work full-time.⁴ For students at community colleges, full-time work and schooling are more likely to be complementary – National Center for Education Statistics (NCES) data show that nearly 8 in 10 community college students work while in school; those who do work while enrolled work an average of 34 hours per week.⁵ Rising incomes during periods of economic expansion will allow these students to better afford the costs of college, work fewer hours, and take more credits. Economic recessions have the opposite effect.

To summarize, the business cycle will have modest short-term effects on enrollments. These effects will cause minor variations around the long-term trend of enrollments, a trend that is driven mainly by demographics.

Long-Term Economic Change and Enrollments

What sorts of long-run, structural changes are at work in our state's economy, and how do these shape the need for postsecondary enrollments in Washington? Washington's economy, like that of the nation as a whole, has undergone a long-term shift in the direction of requiring – and rewarding – training and education that are obtained through postsecondary schooling.

The changing skill level of our economy's workforce is rooted in three forces:

- The industrial composition of employment can change, i.e. employment growth or decline in certain industries can reshape the skill level of the economy.
- The occupational composition of employment may change, i.e. there may be shifts over time in the kinds of workers needed within an industry.
- The skill requirements of an occupation may change, i.e. the content of an existing job may change, typically due to technological change. For example, drafters may do the same work that they did 30 years ago, but they may use additional, more complex skills.

In the second half of the twentieth century Washington's economy underwent a sweeping and sustained change in the industrial composition of employment. The growth and change in industrial sectors has resulted in a substantial increase in Washington's need for highly trained workers. Reviewing the state's economy in *A 50-Year Perspective of Employment Trends in Washington State, 1947-1997*, the state's labor economists write, "the shift from a goods-producing or brawn-based economy to a services-producing or brain-based economy is real and will continue. While aerospace and agriculture remain prominent, other traditional industries such as forest products are being supplanted by technology-based industries."⁶

⁴ National Center for Educational Statistics, *Postsecondary Financing Strategies*, February 1998, p.10. In 1992-1993, 68.6% of all public 4-year students worked while enrolled, for an average of 26.3 hours per week.

⁵ Idem.

⁶ *A 50-Year Perspective of Employment Trends in Washington State, 1947-1997*, Studies in Industry and Employment, Washington State Employment Security, May 1998, p.27.

This pattern of change is both national and contemporaneous. Describing the nation's economy in the 1990's, the Department of Labor notes that "employers are increasing their demand for workers with specialized skills."⁷ Its *Report on the American Workforce* concludes that between 1989 and 1997:

- Average skill levels in the economy as a whole increased;
- Shifts in the industrial composition of employment did not account for the bulk of this overall rise in skill levels;
- Rather, shifts in the kinds of workers needed within a given industry and skill shifts within broad occupational groups (e.g. secretaries) account for the majority of rising skill requirements.

These changes have been fueled, they note, by technological changes, organizational changes, and by the globalization of production – none of which show any signs of abating in either the national or state economy.

Seen from the vantage point of setting enrollment goals for Washington State, the crucial question is this: in the decade ahead will the Washington economy continue to increasingly require workers whose training and education extend beyond the level of secondary schooling?

The best answer to this question can be found in the forecasts of employment and occupational growth that are produced by the Federal Bureau of Labor Statistics (BLS) and the Washington Employment Security Department (ESD). The BLS forecasts growth for each industrial sector and each occupation, and it classifies the educational level expected of employees in each occupation. Pairing employment forecasts and its skill classifications, the BLS projects the educational requirements of expected job openings. The most recent forecast for the state's economy, produced by Washington's ESD, is for the period 1998 to 2008. This forecast, summarized on the next page, leads to four principal findings about state workforce needs in the years 1998-2008.

⁷ "The Many Facets of Skills," Ch. 2 of *Report on the American Workforce*, US Department of Labor, 1999, p. 37.

Employment, Education, and Training in Washington, 1998-2008

| | a | b | c | d | e | f | g | h |
|------------------------------|----------------------|--------------------|----------------------------------|--------------------------|-----------------------------|---------------------------|--------------------------|---------------------------|
| Education/Training Level | number of jobs, 1998 | 1998 % of all jobs | projected number of jobs in 2008 | Projected % of 2008 jobs | increase in jobs, 1998-2008 | % of all growth 1998-2008 | rate of growth 1998-2008 | number of annual openings |
| 1. First Professional Degree | 36,704 | 1.2 | 42,361 | 1.2 | 5,657 | 1.0 | 15.4 | 1,165 |
| 2. Doctor's Degree | 28,911 | 1.0 | 35,973 | 1.0 | 7,062 | 1.3 | 24.4 | 1,452 |
| 3. Master's Degree | 34,266 | 1.1 | 42,461 | 1.2 | 8,195 | 1.5 | 23.9 | 1,455 |
| 4. BA/BS Plus Experience | 211,013 | 6.9 | 257,093 | 7.2 | 46,080 | 8.5 | 21.8 | 9,035 |
| 5. Bachelor's Degree | 336,544 | 11.1 | 443,942 | 12.4 | 107,398 | 19.9 | 31.9 | 17,289 |
| 6. Associate Degree | 119,731 | 3.9 | 144,279 | 4.0 | 24,548 | 4.5 | 20.5 | 4,524 |
| 7. Postsecondary Vocational | 248,273 | 8.2 | 287,493 | 8.0 | 39,220 | 7.3 | 15.8 | 9,554 |
| 8. Related Work Experience | 235,257 | 7.7 | 269,598 | 7.5 | 34,341 | 6.4 | 14.6 | 8,331 |
| 9. Long-term OJT (>12 mo.) | 243,279 | 8.0 | 279,908 | 7.8 | 36,629 | 6.8 | 15.1 | 9,048 |
| 10. Mid-term OJT (1-12 mo.) | 503,862 | 16.6 | 564,654 | 15.8 | 60,792 | 11.3 | 12.1 | 18,024 |
| 11. Short-term OJT (<1 mo.) | 1,045,110 | 34.3 | 1,215,428 | 33.9 | 170,318 | 31.5 | 16.3 | 46,200 |
| TOTAL | 3,042,950 | 100.0 | 3,583,190 | 100.0 | 540,240 | 100.0 | 17.8 | 126,077 |

Source: Employment Security, Labor Market and Economic Analysis, "Employment and Openings by Education Level, 1998-2008."

Note: The Bureau of Labor Statistics (BLS) uses the term, "postsecondary vocational" to refer to only a portion of vocational education after high school. The BLS meaning is considerably narrower than the way the Workforce Training and Education Coordinating Board, or the State Board for Community and Technical Colleges use the term.

Findings: Trends in Employment, Education, and Training in Washington 1998-2008

A review of the projections contained in the chart on the preceding page lead to four findings:

I. Many Jobs Now Require Brief Training

Washington's economy contains a very large base of jobs requiring modest training. In 1998, our state's economy contained roughly three million jobs, one-half of which (50.9%--column b, categories 10 and 11) required "on the job training of 12 months or less." Slightly more than one in four (27.8%--column b, categories 6 through 9) required some sort of training, education, or work experience of greater than one year (but less than a baccalaureate degree). Slightly more than one in five (21.3%--column b, categories 1 through 5) required baccalaureate or advanced degree training.

II. Change and Continuity in Washington's Economy

Rapidly growing, high-education occupations account for a relatively smaller share of employment than do jobs requiring modest training and education. Thus, shifts in skills and training demanded by our state's labor market will occur slowly. Nonetheless, the preceding table clearly shows the long-term changes that are shaping our state's economy. Jobs classified as requiring baccalaureate, baccalaureate plus experience, or master's degree education are expected to comprise a growing share of employment (columns b and d, categories 3 through 5). In contrast, jobs requiring less than one year of on-the-job training will comprise a gradually diminishing share of employment in Washington.

III. New Jobs Are Increasingly High-Skill Jobs

The long-term structural changes that we have described – the "upskilling of the workforce" – can clearly be seen **in the rate of growth of new jobs** (column g). Occupations requiring post-secondary education will be growing faster than the overall average growth rate of 17.8% (column g, total) for all new jobs. The annual growth rate of new jobs is highest among occupations requiring long preparation, while new job growth is slower than average among jobs requiring brief preparation.

In addition to the data in the chart, ESD estimates that four of the six fastest growing occupations require a bachelor's degree or higher: computer scientists, computer engineers, database administrators, and systems analysts. About a third of the new jobs that will be created over the next ten years will require a baccalaureate or advanced degree. About 6 out of 10 new jobs added to our state's economy will require education, training, or related work experience of more than one year (column f, categories 1 through 9).

IV. Many Job Openings Will Continue to Require Brief Training

Workers retire, die, and change careers, creating the need for replacements in existing jobs. New jobs are created each year, too. Together, replacements (720,000 jobs) and growth (540,000 jobs--column e, total) will create about 1.26 million (column h, total times 10 years) total job openings between 1998 and 2008, one-third of which will require men and women with postsecondary education.

This long-term economic forecast is corroborated by the expectations of Washington's employers. Surveyed by the WTECB in 1999, the state's employers indicated that they expect their need for more educated workers to increase in the next five years.⁸ Few employers expect that they will need more workers with a high school education or less; many expect that their postsecondary training needs will grow.

To summarize, Washington's economy has been undergoing a long-term pattern of change, increasingly demanding (and rewarding) workers with skills obtained through postsecondary education. Forecasts for the remainder of this decade indicate that this pattern will continue at a steady pace. The state's Employment Security Department estimates that about 44% of the new jobs created between 1998 and 2008 will require postsecondary education. As older workers retire and leave the workforce, their replacements will continue to need more and more skills, training and education. Simply put, more of our state's jobs will require more skilled workers.

Who Will Provide Education and Training?

Although it is clear that an increasing share of Washington's workforce will need to be increasingly skilled, it is not entirely clear who will provide this training and education, or how it will be provided. This is a time of fundamental change in postsecondary education. National (and international) education and training opportunities are now available to Washington's students through distance education technologies. New providers of education and training, including a burgeoning information technology certification industry, will provide learning opportunities previously unavailable to our state's students.

New Providers

New providers of postsecondary education and training are flourishing, and promise to alter students' enrollment decisions by providing new ways of obtaining education and training. Three types of new providers populate our state: out-of-state providers of distance education, for-profit universities that operate within Washington, and industry-based providers of information technology certification.

Distance Education

The HECB has completed a study of distance education at the state's public colleges and universities in response to HB 2952. However, for the purposes of setting public enrollment goals the key question is, "How many students are now enrolled, or will enroll in the decade ahead, in courses provided by institutions that are neither public universities nor two-year colleges?" Examples of these providers include private, for-profit providers, such as Jones University (<http://www.jones.com>), and out-of-state public universities, such as Old Dominion University. There is little data available about future enrollments in these institutions since their programs are constantly evolving to meet market needs. Nor, do we know whether these enrollments are substitutes for (or complements to) publicly-funded enrollments. Hence, there are no reliable conclusions to be reached about their impact on the Master Plan enrollment goals.

⁸ WTECB Survey, *Workforce Training Needs and Practices of Washington State Employers 1999*.

Information Technology Certification

Clifford Adelman of the United States Department of Education writes:

A new class of postsecondary providers has come on the scene – boundary-breaking and border-crossing every step of the way – to scramble institutional and governmental assumptions about the future. In our frenetic fascination with the likes of the University of Phoenix and virtual degree delivery, we have been looking for challenges in the wrong direction. [Rather, we should be paying attention to the emergence of IT certification] . . . a global information technology guild . . . [which now operates] at 5000 sites in 140 countries and administered 3 million assessments in 1999.⁹

Information technology certification--from Cisco, Microsoft, Oracle, and others--has come to play an important part in the training and retraining of IT workers. Neither federal nor state postsecondary data systems incorporate this “parallel universe” of postsecondary training. Therefore, there is no reliable data available on the characteristics of certificate holders, including the number of people who obtain certification annually, their personal characteristics (e.g. age), or whether certification is a *substitute* for an academic degree, or a *complement* to it. Lacking this evidence, firm conclusions cannot be reached about the impact of industry-based certification on the demand for publicly-funded enrollment in postsecondary education.

Traditional Providers, New Opportunities for Enrollment

Traditional institutions of postsecondary education, public and non-profit colleges and universities, are responding to these challenges in creative ways. Some, such as the University of Washington, are sharply expanding their participation in this “parallel universe” through non-state-funded enrollments. At the University of Washington, for example, the number of certificate students has swiftly expanded in the past decade, increasing from 129 in 1991-1992, to 1,740 in 1999-2000.

When the HECB formulated its enrollment goals in the 2000 Master Plan, it included an estimate of non-state-funded enrollment in the public institutions for 2010 in its analysis. It arrived at this estimate by obtaining 1998 non-state funded enrollments in public institutions from OFM’s HEER reports, converted these data from headcounts to enrollments (using OFM conversion figures), and calculated a 1998 ratio of state-funded to non-state funded enrollments. Finally, it carried forward this 1998 ratio to 2010, calculating that the number of non-state funded enrollments in public institutions would grow by about 4,900 by 2010.

The state’s public baccalaureate institutions reviewed this methodology in July 2000. All public baccalaureate institutions except for the University of Washington indicated that they expected self-sustaining enrollments to grow at the same rate as state-funded enrollments. The University of

⁹ *A Parallel Universe: Certification in the Information Technology Guild Change*, May/June 2000, pp. 20-29.

Washington indicated that it expected an average annual increase of 4 to 6 percent in self-sustaining FTEs – about twice the rate of expected growth in state-funded enrollment.

To summarize, new avenues for study are opening new choices to learners. It is possible that population increases in the decade ahead will not produce the same enrollment demands in 2010 as demographic booms of previous decades did. And, in the decade ahead it is possible that students will increasingly rely upon new pathways to acquire the skills and training they need for labor market success.

However, we are presently unable to reliably measure or estimate the scope of these learning opportunities, or quantify their impact on long-term enrollment trends. The evidence available about “alternative providers” raises serious questions about the adequacy of federal and state data for higher education policy.

How Many Publicly Funded Enrollments Are Needed?

In light of the evidence presented, were the Master Plan enrollment goals for postsecondary education appropriate to the needs of Washington’s economy?

Postsecondary Vocational Training and Washington's Economy

The HECB 2000 Master Plan did not establish a separate enrollment goal for postsecondary vocational training. Rather, it established an overall enrollment goal for the state’s community and technical colleges: the maintenance of current participation.

The Workforce Training and Education Coordinating Board submitted an analysis of the state-funded vocational training needs to the study group. Its principal findings and enrollment recommendations, contained in *Workforce Training Supply, Demand, and Gaps 2000*, are these:

Our analysis focuses on middle-level preparation, which includes occupations that generally require from one year and up to, but less than, four years of postsecondary training. Together community and technical colleges, private career schools, and apprenticeship programs prepare about 22,000 workers with middle-level training per year. When we compare supply to the number of job openings, we find an annual skills gap of about 8,000 during the 1997-98 school year. If constant participation rates are maintained, the skills gap would narrow to around 7,000 by the 2004-05 school year, and remain at roughly that level to 2008-09.

The document continues:

We conclude that maintaining current participation rates in community and technical college programs, private career schools, and apprenticeship programs will not increase the supply of workers with middle-level preparation by enough to

meet demand. We recommend that this gap be closed by increasing the number of FTEs devoted to job preparatory programs at the community and technical colleges beyond current participation rates.

The required increase in job preparatory FTEs depends upon two critical factors – how soon the skills gap is to be closed and the extent to which the community and technical colleges can increase efficiency in training. Efficiency refers to the number of FTEs required to supply the labor market with an additional trained worker. If there are no efficiency gains, to close the skills gap completely by 2008-09 would require adding roughly 2,700 additional job preparatory FTEs per year beginning with the 2001-02 school year.

Other Lower Division Enrollments and Washington's Economy

The HECB has received no suggestions or analysis from representatives of the two or four-year sectors of postsecondary education to indicate that the Master Plan enrollment goals for lower-division enrollments – other than job preparatory – were inappropriate to the long-term needs of the Washington State economy.

SECTION D

THE RELATIONSHIP OF ENROLLMENT TO EDUCATION POLICIES

Summary

Several of Washington State's educational policies – including commitments to K-12 standards-based reform, outreach efforts to disadvantaged youth, and efforts to attract more students to high-demand fields – could affect student enrollment in two and four-year institutions by 2010. These policies could either increase or decrease enrollment demand from the levels discussed in the HECB 2000 Master Plan.

In general, it is extremely difficult to forecast the long-term impact on higher education enrollment of programs that are either incomplete (as is K-12 reform) or which have not yet produced an extensive performance record (such as the state's new GEAR UP outreach program). Other policies that clearly affect enrollment, such as tuition or financial aid, are largely the products of future policy and budgetary decisions that cannot be forecast with precision.

Given the uncertain nature of forecasting public policy development over a 5- to 10-year period, the review group did not attempt to place a specific numerical value on the possible impact of these policy changes. However, at a minimum, there is some evidence that should be considered by policy-makers as they attempt to project and allocate resources to support enrollment changes during this decade.

Tuition Policy

A major component of a student's educational cost that is within the control of state government is tuition. Washington has taken several different approaches to tuition-setting over the past 25 years, although the Legislature and Governor have consistently retained tuition-setting authority through the state operating budget.

The longest-lived policy was in effect from 1977 through the 1994-95 academic year, when the Legislature and Governor set tuition rates as a percentage of the cost of instruction and approved tuition increases to keep pace with rising costs. That policy ended after the 1993-95 Biennium, during which the state significantly increased the portion of educational cost borne by students and enacted a biennial tuition increase of nearly 30 percent.

During the four years from 1996 through 1999, tuition increases were not based on a specific proportion of cost, but were set at 4 percent per year. For the current 1999-2001 Biennium, colleges and universities were authorized to increase tuition within a range, from 0 to 4.6 percent in 1999-00, and from 0 to 3.6 percent in 2000-01. Most i

over the past three biennia, and significantly more stable than during the years when the state had a formal policy.

The table below identifies the average tuition for the three types of public higher education institutions. For the last several years, actual tuition and fees at each individual institution have varied somewhat. However, the variation at any institution is within \$50 of the average shown below.

**Resident Undergraduate
Average Tuition and Fees Per Academic Year**

| Year | Research | Percent Increase from prior year | Compre-hensives | Percent Increase from prior year | Comm. Colleges | Percent Increase from prior year |
|--------------------------|----------|----------------------------------|-----------------|----------------------------------|----------------|----------------------------------|
| 1990-91 | \$1,953 | | \$1,611 | | \$ 867 | |
| 1991-92 | 2,178 | 11.5% | 1,698 | 5.4% | 945 | 9.0% |
| 1992-93 | 2,253 | 3.4% | 1,785 | 5.1% | 999 | 5.7% |
| 1993-94 | 2,532 | 12.4% | 1,971 | 10.4% | 1,125 | 12.6% |
| 1994-95 | 2,907 | 14.8% | 2,256 | 14.5% | 1,296 | 15.2% |
| 1995-96 | 3,021 | 3.9% | 2,342 | 3.8% | 1,350 | 4.2% |
| 1996-97 | 3,136 | 3.8% | 2,433 | 3.9% | 1,401 | 3.8% |
| 1997-98 | 3,256 | 3.8% | 2,529 | 3.9% | 1,458 | 4.1% |
| 1998-99 | 3,386 | 3.8% | 2,626 | 3.8% | 1,515 | 3.9% |
| 1999-00 | 3,524 | 4.1% | 2,733 | 4.1% | 1,584 | 4.6% |
| 2000-01 | \$3,646 | 3.5% | \$2,829 | 3.5% | \$1,641 | 3.6% |
| 10-year percent Increase | | 86.7% | | 75.6% | | 89.3% |

Source: Higher Education Coordinating Board

In the 2000 Master Plan, and in its past three annual legislative agendas, the HECB has called for tuition to be formally linked by the state to the rate of change in the state's per capita personal income. The Board contends per capita income is a fair measure of citizens' ability to pay a share of the cost of education, and that the public linkage of tuition to a widely used and understood economic indicator will afford tuition predictability for students and their families.

Tuition issues are discussed in greater detail in the HECB biennial reports on national trends in tuition and fees. A report was published in 1999 and has been updated for the 2001 Legislative Session.

Tuition, Financial Aid and Student Behavior

Research shows that changes in tuition and the availability of financial aid to low-income students have a direct effect on students' enrollment patterns. During the Master Plan re-examination, the HECB and its partners examined extensive research into the behavior of prospective students when faced with

significant increases in the “net cost” of their college education – that is, the difference between tuition and other expenses, and financial aid.

Lower income students are particularly affected by tuition increases. National research studies of the influence of net cost on college participation conclude that each \$100 to \$150 increase in net college prices, of which tuition is a significant component, produces a 1.8 percent to 2.4 percent reduction in enrollment among lower income and disadvantaged students. Researchers report that this estimate understates the impact on postsecondary participation of lower income individuals since it does not include those who decided not to apply. While researchers corroborate the negative impact of rising college prices on low-income students, they find no evidence that increases in net cost inhibit enrollment for more affluent students.

Washington State’s significant investments in need-based financial aid may have reduced the impact of net price increases on college participation by low-income students, but many low- and middle-income families are forced to borrow heavily as prices rise to finance their students’ college education.

Washington’s current financial aid policy is most clearly outlined in the State Need Grant program – the state’s original and largest need-based aid program at \$168 million in the 1999-2001 Biennium. Based on the recommendation of the HECB, the Legislature and Governor provided a level of funding designed to ensure that the State Need Grant is available to qualified students with family incomes up to 65 percent of the state’s median, (currently, 65 percent of the median income is \$37,500). The Legislature and Governor also approved legislation in 1999 (HB 1140), establishing the goal that over time, student grants should be increased to the level of tuition at their public institution (grants to students at private or independent universities would be capped at the level of the public research universities).

The HECB recently endorsed the goal that the State Need Grant should be extended to students from families whose income is up to 75 percent of the median (estimated to be about \$43,000 per year). This decision was based on concern for the financial burden faced by families of modest means, whose incomes narrowly exceed the current limit and are often forced to borrow heavily to pay for college expenses.

The net price of education not only helps to determine whether students attend school, it is also a factor in the decision of where they will enroll. And, the net price has a significant impact on the demographic characteristics of the student population in a given institution. Nationally, over the past two decades, the distribution of students from low-income families has shifted from universities to four-year colleges, and from four-year colleges to two-year colleges.

The lack of family-income data for Washington students, as discussed elsewhere in this report, does not currently permit a state-specific study of income-related student enrollment behavior. However, there is no reason to believe the experience in Washington is different from that of the nation as a whole. To ensure that low-income students continue to have equitable access to higher education, the HECB

continues to support moderate tuition increases coupled with appropriate expansion of need-based financial aid as the surest means of helping students attend college.

Since these policies – moderate tuition increases coupled with steady support for financial aid – are reflected in current state policy, the study team did not suggest any specific changes to the student enrollment forecasts. It is important to recognize that significant variation from the current policies could have a substantial effect on student access and choices, particularly affecting low-income students.

High-Demand Enrollments

The Legislature and Governor are currently pursuing programs to increase enrollment opportunities in high-demand fields such as information technology, teacher training, and health care. These programs, if continued through the decade, may increase the rate at which citizens participate in post-secondary education. However, it is also possible that they will not increase the rate of participation, but simply shift enrollment opportunities from some courses and programs to others.

High-demand courses and programs exist at both the two-year and the four-year college and university level, in both public and private institutions. Demand has been substantiated from a wide range of employers, and students also have been voting with their feet as they increasingly attempt to enroll in programs that have the brightest career opportunities in Washington's economy.

The state has been urged to adopt policies that will enable colleges and universities to respond to a number of industry needs. For example, studies released in 1998 and 1999, by the Washington Software Alliance (WSA) and the Washington Council of the American Electronics Association (AEA) contained the following information:

- Washington's high-technology employment has grown 59 percent since 1990, from 60,000 to more than 100,000 workers. Meanwhile, average high-technology compensation has increased 79 percent, from \$45,000 to more than \$80,000. Technology salaries are more than 1½ times the average private-sector wage.
- The AEA estimated that one in eight computer science and engineering positions requiring a bachelor's degree or higher was vacant. One in four such positions requiring an associate's degree was vacant.
- As of 1998, the software industry in Washington expected to add 64,000 jobs in Washington in that industry by 2001, with 75 percent of those jobs requiring at least a bachelor's degree. That finding was based on a survey of more than 200 firms of all sizes.
- While the number of new jobs grew by 59 percent since 1990, the number of technology degree graduates increased by just 3 percent, from 3,300 in 1990, to 3,600 in 1997. More than 10 percent of the companies surveyed by the Software Alliance already had been forced to bring in workers from other countries to fill their immediate needs.

Information technology is not the only industry sector with a growing need for well-educated college graduates. The state is expected to require at least 5,000 new school teachers in the next 5 to 10 years,

to respond to increased enrollment, and to replace retiring instructors at all levels of the educational system. If the state chooses to expand the capacity of teacher training programs at the baccalaureate institutions without shifting enrollment away from other existing programs, the overall effect could be a significant increase in enrollment beyond the current-service level.

The health-care profession also sees a significant need for trained college and university graduates, particularly at the baccalaureate level. A variety of professional and industry associations have cited shortages of registered nurses, pharmacists and mental health providers.

Given the fiscal uncertainties that will affect the size and priorities of the state budget process, it is impossible to predict the effect on college enrollment of these and other policy options. However, the Legislature and Governor may pursue options that do more than shift student enrollments from one program to another within the current service level, but actually expand the capacity of high-demand programs to achieve specific policy aims.

Running Start and Other Dual Credit Programs

The State Board for Community and Technical Colleges (SBCTC) reports that 9 percent of high school juniors and seniors in Washington (13,092 headcount students in 1999-2000) participate in Running Start to simultaneously earn high school and college credit. Full-time equivalent enrollment in Running Start increased by two-thirds from 1995 to 1999, but the SBCTC expects that rate to slow during the next few years to roughly mirror the growth in statewide high school enrollment. Running Start enrollments and annual growth rates are displayed in the table below, dating from 1992-93, the first year the program was available statewide.

Running Start Enrollments at Community and Technical Colleges

| Academic year | Headcount | Annual increase |
|---------------|-----------|-----------------|
| 1992-93 | 3,350 | |
| 1993-94 | 5,452 | 62.7% |
| 1994-95 | 7,418 | 36.1% |
| 1995-96 | 8,638 | 16.4% |
| 1996-97 | 10,250 | 18.7% |
| 1997-98 | 11,476 | 12.0% |
| 1998-99 | 12,355 | 7.7% |
| 1999-2000 | 13,092 | 6.0% |

Source: State Board for Community and Technical Colleges

Note: As of fall 2000, an estimated 150 Running Start students were enrolled at baccalaureate institutions (EWU, CWU and WSU)

Other dual credit programs, such as College in the High School (CHS) and Advanced Placement, enable students to accumulate college credit before they arrive on campus as “college students.” These programs are more popular than Running Start with many K-12 school administrators, because students remain on their high school campuses, and College in the High School courses are generally taught by high school instructors. However, some students may prefer Running Start programs, which are tuition-free, over College in the High School programs that require payment for courses.

During 1999-2000, some 989 students participated in College in the High School to earn credits from the community and technical colleges. This was the first year for which the SBCTC identified CHS enrollments separately from other programs.

A total of 248 Washington high schools – 58 percent of the statewide number – offer one or more Advanced Placement courses, for which students *may* receive college credit on the basis of their performance on AP examinations. In 1999, Washington students took nearly 15,000 AP examinations, but many students undoubtedly took more than one exam, and unduplicated enrollment data is not available for AP programs. The Advanced Placement program is administered nationally by The College Board.

It is much easier to calculate the level of student participation in these programs than to predict their future impact on state higher education enrollments. In addition to the obvious challenge of predicting the behavior of high school students, educators have found that Running Start students do not have the same course-taking behavior as other students after they finish high school.

The University of Washington has studied the course-taking behavior of Running Start students versus that of native freshmen. Students who enroll at the UW after participating in Running Start tend to take slightly fewer credits during their first year than do first-time freshmen. (In 1998-99, the difference ranged from 0.5 to 0.8 fewer credits per quarter.) Over time, if this pattern applied statewide, it would slightly limit the number of additional enrollments needed to accommodate a growing population. But there are many other factors that also would affect student course-taking behavior.

There is little or no data available to compare the course-taking behavior of students who participate in College in the High School or Advanced Placement with that of students who accumulate all their post-secondary credits at higher education institutions.

Welfare Reform

The state’s WorkFirst welfare reform program has had dramatic effects on the college participation of people who receive public assistance. Historically, most of these students are single mothers who attend the community and technical colleges. Through the mid-1990s, about 30,000 welfare recipients attended the community and technical colleges each year. But following the passage of the state’s WorkFirst law, which strongly emphasized work over education and training, the number of welfare recipients at the two-

year colleges dropped by almost half, to just under 16,000 in 1999-00. Current enrollment projections already reflect this change, but it is important to look at the long-term effects of this change, and to consider the enrollment implications of other possible changes in WorkFirst laws or policies.

The long-term impact of WorkFirst is unclear for several reasons. The SBCTC has noted that the primary reason for the initial drop in enrollment occurred because those WorkFirst recipients with the best academic and job skills – in many cases, these were college students – were very likely to go to work. Further, even those who could not initially find jobs were required to seek employment rather than go to school for further training.

Two years later, there is evidence that the decline in the college enrollment of welfare recipients has moderated. For example, the community and technical college system has developed a significant number of new courses and programs specifically aimed at WorkFirst participants, and the state's WorkFirst agencies increasingly recognize that many family members need education and training in order to be employable and leave the welfare system. For further information about current initiatives, see the State Board for Community and Technical College's 2000 report, "First-Year Accountability Report for WorkFirst Training Programs."

Outreach Initiatives

Educators and public officials have been encouraged by reports that efforts to provide information and encouragement about college opportunities to diverse groups of 'at-risk' students is increasing the participation of those students in post-secondary education. One state's outreach effort, the Oklahoma Higher Learning Access Program, reports that it has boosted the college-going rate of participating students from the statewide average of 55 percent to 80 percent.

In Washington, the state is currently operating the Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) outreach program, a successor to the National Early Intervention and Scholarship Partnership (NEISP) program, which began operation in 1994-95. Program administrators recently completed a four-year evaluation of NEISP to determine how well the program objectives were being met.

The evaluation revealed that the NEISP program made good progress toward its long-term goals to encourage low-income and disadvantaged students to graduate from high school, and to motivate them to attend college. Of the program's 503 students, 97 graduated from high school and 308 remained on-track to receive their high school diplomas. Of those who were old enough to graduate by August 1998, about 65 percent had enrolled in post-secondary education or training programs.

In addition to increasing the participation of 'at-risk' students in higher education, outreach initiatives also have the stated goal of increasing the diversity of the state's student population.

However, the state's experience to date does not permit a forecast of the effect on long-term enrollment behavior of student outreach initiatives, many of which are aimed at students in elementary or middle schools, who will not be eligible for college until the latter years of the decade.

Retention and Student Progress

All of the state public higher education institutions are pursuing efforts to improve the rate at which students progress toward completion of their studies. In the baccalaureate sector, the state has established overall student retention (the rate at which students remain enrolled from year to year) as a statewide measure. The community and technical colleges, meanwhile, measure the percentage of students who make 'substantial progress' toward a degree.

Theoretically, if significantly greater proportions of existing students were retained or make substantial progress, there could be additional enrollment pressure to accommodate these continuing students as well as newly enrolled students. However, statistics from the past several years at both the two-year and four-year institutions show relatively little change in retention and student progress rates. Further, institutions that already have reached their enrollment capacity would not be able to increase total enrollment, but could be forced to restrict the number of entering students if a greater portion of existing students returned from year to year.

Based on evidence to date, it appears unlikely that these initiatives will have significant impact on overall enrollment by 2010. Further information on retention and student progress is available in HECB biennial accountability reports, and in SBCTC annual academic year reports.

Enrollment and the Price of Attendance

Many factors influence the decision to participate in higher education, not the least of which is affordability. Washington has maintained a long-standing policy of making college generally affordable to state residents by paying for much of the cost through state appropriations to public institutions. This state investment substantially reduces the amount students and their families must pay for tuition. It is available to all who qualify for admission to a public college or university, without regard to financial need.

However, college costs much more than just tuition. Students must also purchase books and supplies, and pay for living expenses while they are enrolled. When living costs are included, it will cost the typical student about \$10,700 to attend a community college during the 2000-2001 academic year. Students at one of the state's public baccalaureate institutions will have to budget for approximately \$12,600; and it will cost students at an independent college or university about \$26,000 for one year.

Even with low tuition at the public institutions, many families do not have enough resources to cover these costs. Federal formulas used to estimate the amount families should be able to pay for college costs

indicate that, to pay for the full cost of attendance at a public institution from current income, a family of four would need to earn about \$70,000 per year.

While paying for college represents a challenge for students from almost all economic strata, the issue of affordability is particularly acute for lower-income families, who have limited personal resources. For students from lower-income families, the ability to enroll and persist to program completion is heavily influenced by the availability of student financial aid. For these students to attend, the amount of financial aid must be adequate, and it must be provided through a reasonable combination of grants, part-time work, and loans.

The state has had a long tradition of providing access to the benefits of a college education available to all qualified citizens. In addition to making public higher education generally available to residents through affordable tuition, the state also provides financial assistance to needy students attending both public and independent institutions. Almost all state-funded student financial aid is provided to individuals who could not otherwise afford to attend, even with low tuition, and assistance from federal and local financial aid programs.

The state's original, and largest, financial aid program is the State Need Grant program. This program is targeted to the state's lowest income residents. Currently, otherwise qualified students with family incomes of 65 percent or less of the state's median family income (MFI) receive grants. (For a family of four, 65 percent MFI is \$37,500.) The Higher Education Coordinating Board has established a service goal that would provide grants equivalent to full tuition at the state's public institutions and permit awards to students from families with incomes of 75 percent or less of the state's MFI.

The Impact of Tuition Policy on Low Income Students

Economists and educational researchers have devoted a great deal of attention to the link between the net cost of attending college (tuition and other expenses less grants and other financial aid), and college participation. In general, these studies have found that rising college prices have a negative impact on college participation of low income and disadvantaged groups at several different points in the process of making a decision to go to college.

Higher net prices discourage some students from applying to college, they discourage some who have applied and been accepted from enrolling, and they deter some who have already enrolled from continuing. Researchers consistently report that, as prices rise, college participation among lower-income and disadvantaged groups declines. National research studies on the influence of net price on college participation conclude that each \$100 to \$150 increase in net college prices, of which tuition is a significant component, produces between 1.8 and 2.4 percent reduction in enrollment among lower income and disadvantaged students. Researchers report that this estimate understates the impact on

postsecondary participation of lower income individuals since it does not include those who decided not to apply.¹⁰

While researchers corroborate the negative impact of rising college prices on low-income students, they find no evidence that increases in net cost inhibits enrollment for more affluent students. They note that there is a longstanding – and growing – gap between enrollment rates for lower and higher income students, concluding that increases in the net cost facing low income students discourage college attendance among that population.

Access to college, as measured by the proportion of people going to college, has increased consistently over the past 20 years, though gaps between low- and high-income students remain a serious concern. A recent government report¹¹ indicates that, while the enrollment rate in higher education has increased for high school completers in the aggregate over the past thirty years, not all segments of this population participate at the same rate. In 1996, high school completers from low-income families were less likely to go to college immediately after high school (49%) than were their peers from middle-income families (63%), who, in turn, were less likely to enroll than completers from high-income families (78%). Based on Census Bureau data, another researcher (Thomas G. Mortenson, Postsecondary Education Opportunity, August 1999) estimates that a student from the top quartile of family income is nearly 12 times more likely than a student from the bottom quartile of family income to earn a bachelor's degree by age 24.

Net price is not only related to *whether* students will go to school, it is related to *where* they will go. Nationally, over the past two decades, as college prices have increased, the distribution of students from low-income families has shifted from universities to four-year colleges and from four-year colleges to two-year colleges. Policy analysts and higher education researchers have become concerned about whether students attend college, and which schools students attend, because the postsecondary destinations of students are related to student educational attainment and career development. Thus, from a social equity perspective, college tuition and financial aid have become serious policy issues.

Although the lack of family income data for Washington students does not permit state-specific studies of income-related student enrollment, there is no reason to believe the experience in Washington is different than in the nation as a whole. To ensure that Washington's lowest income residents have the opportunity to pursue the program of study to which they aspire and for which they are qualified in a context of rising college costs, state policy makers should maintain their commitment to adequate funding for the State Need Grant program.

¹⁰ Leslie and Brinkman, "The Economic Value of Higher Education," p 155, and McPherson and Shapiro, "The Student Aid Game," p 39.

¹¹ U.S. Dept. of Education, National Center for Education Statistics, The Condition of Education 1998, Washington, D. C., Government printing Office

SECTION E

DEMOGRAPHIC EFFECTS ON ENROLLMENT BEHAVIOR AND FORECASTS

Summary

The baseline projection of enrollment in 2010, as calculated by OFM, is entirely based on demographic variables of age and gender of an increasing population. Other demographic variables might adjust the projection if appropriate data can be found. Examples of other variables include race/ethnicity of the population in 2010, or the variation in expected income levels of the population by 2010. If the population in 2010 is significantly different for these variables compared to the current situation, baseline enrollment projections based only on age and gender may need to change. The following discussion summarizes how these additional variables could be analyzed.

Race/Ethnicity

The population of the state is growing, and the population of various racial/ethnic groups is growing at a greater rate than in the past. Will these patterns have an impact on future higher education enrollments? Unfortunately, the detailed data to make these calculations is not available. The work group has developed an “order of magnitude” estimate of how changing racial/ethnic demographics might affect enrollment if current college-going behavior of these groups does not change. Given the lack of detailed data, this estimate can only be considered an “order of magnitude” estimate, but it suggests that changing racial/ethnic demographics could increase enrollment by up to 8,000 student FTEs in 2010, compared to the projections used in the Master Plan.

Regional Population Variations

State population is concentrated more heavily in some regions of the state than in others, and the geographic location of higher education institutions leaves some parts of the state less accessible to learners. The disparity in population concentrations and institution locations may affect future enrollment patterns. One avenue for examining regional variations is through county-level data. OFM provides data on participation rates in higher education by county. The study group has applied current county participation rates to future projections of county populations and determined that this factor does not appear to make a significant difference in statewide total calculations.

Impact of Immigration Patterns

OFM’s baseline enrollment projections into the future take into account current levels of immigration. However, it has been noted that there are increasing numbers of immigrants, from Eastern Europe and elsewhere, who are requesting training in English as a Second Language (ESL), particularly at community colleges. Demand for this program appears to be growing faster than what is included in the baseline calculations by about 550 FTEs per year (according to SBCTC staff). Therefore, projections of enrollment may need to increase by approximately 5,500 FTE over the next ten years above the Master Plan projections to accommodate a greater need for ESL services.

Income Levels of the Population

Data indicate that state average income levels are consistently rising. However, data also indicate that some segments of the population are currently seeing very little or no increase, while other segments are experiencing substantial growth. These disparities in income across the population may continue, and this could limit the ability of a growing segment of the population to enroll in higher education. There is no data available to produce an estimate of the impact of income changes on enrollment behavior. More importantly, for the purposes of this enrollment re-examination it is assumed that the state's provision of financial aid will completely mitigate any effects from growth in income disparity among sectors of the population.

Analysis: The Effects of Demographic/Behavioral Factors on Enrollment Forecasts

Calculation of Current Participation Rate

OFM calculates the level of enrollment to continue providing the current level of opportunity for students (Current Participation Rate) by holding constant current rates of attendance for an increasing population. This baseline calculation does take into account changes in two demographic variables: age of students, and gender. However, there are other demographic/ behavioral variables related to the changing characteristics of future students that may also impact expected enrollment levels.

A note of caution here is appropriate. The approach adopted in this enrollment re-examination process of separately analyzing variables that might affect enrollment levels must be undertaken cautiously when looking at demographic/behavioral variables. While it makes sense to examine and discuss individual variables "in isolation" this requires an assumption that all other variables can be held constant. For example, baseline projections (Current Participation Rate) use only two variables – age and gender – while other variables (race, income, etc.) are not incorporated. Then, we might look at the effects of an additional variable such as race (described below). However, in the case of demographic variables it seems particularly difficult to examine one variable at a time since many of these variables are inter-related. That said, we will still make the effort to disaggregate impacts as much as possible to increase our understanding of enrollment factors and choices.

Another note is important here. For the purpose of clarity, all of the comparisons used in this section will be based upon the enrollment projections contained in the HECB Master Plan. OFM has recently released a revised calculation of the number of FTEs needed to maintain the current level of opportunity. This estimate is about 2,700 below the 36,300 estimate in the Plan. However, it will be clearer to make any comparisons to the original Master Plan projections rather than the recent revision in order to identify changes from the Plan.

Selecting Additional Demographic/Behavioral Variables

Many factors/variables are interwoven into an individual's decision to pursue higher education. Age and gender are factors that are already included in OFM's baseline projections of the Current Participation

Rate; but there are other demographic/behavioral factors that might impinge on a student's ability or interest in accessing higher education. Among these other factors are the following:

- Race/ethnicity of the potential student;
- Geographic location of the potential student;
- Immigration status of the potential student; and;
- Financial situation of the student and their family; i.e., is college affordable and is there a willingness to use family resources for college expenses. This includes the level of knowledge and readiness to pursue financial aid when needed.

There are more demographic/behavioral variables that have the potential for affecting enrollment decisions; but these are the four variables that were addressed in the enrollment re-examination process. These variables were selected by consensus of the study team members and seem to be most likely to have significant effects on choices of current Washington residents regarding the pursuit of higher education. As stated earlier, each variable will be reviewed separately, with recognition that they are inter-related and may all be part of an individual student's choices.

Race/Ethnicity

The population of Washington State is growing and becoming more ethnically diverse each year. And, each of the various racial/ethnic groups is growing at different rates. Will a changing proportion of some racial/ethnic groups with different college-going patterns have a significant impact on future higher education enrollments?

The ability to estimate the impact of changing racial/ethnic demographics is severely limited by a lack of data. Ideally, a current participation rate would be calculated based on enrollment by age and race/ethnicity for each single year of age. This participation rate could then be applied to projections of the population in 2010, again disaggregated by single year of age for each racial/ethnic group. For example, the percentage of 18-year-old Asian students in 1999, (compared to the total state population of Asians who are 18) would be calculated. This percentage would then be applied to the projected population of Asians who will be 18 in 2010. The result would be the expected enrollment in 2010 of 18-year-old Asians.

However, the most recent data showing the population's race/ethnicity by year of age is from 1992 – which is too old to be useful for making projections to 2010. It is possible that new information may become available in the future. OFM continually updates population projections by age and race/ethnicity. Data from the 2000 Census, as well as supplementary surveys, will be used in future revisions of these calculations. Further, the enrollment data now being collected by OFM (through PCHEES) is expected to provide student information along several dimensions, including age, gender, and race/ethnicity. With these new data sources, reliable projections using race/ethnicity may be possible within the next year.

In lieu of quantifiable data, we can undertake a general analysis of past enrollment data to help illuminate the direction of potential future effects on enrollment expectations when taking into account race/ethnicity. The following discussion is based on the most recent data available.

Recent Population Trends

Overall, Washington State's total population increased significantly between 1990 and 1999. Looking at the racial/ethnic composition of the population, the White/Caucasian population increased, but the proportion of White/Caucasian in the total population decreased during the decade. As a result, the proportion of all racial/ethnic minorities increased (based on Census estimates, see OFM website). Specifically, White/Caucasians comprised nearly 87 percent of the population in 1990, and 83 percent in 1999. Hispanics and Asian/Pacific Islanders saw the largest increases between 1990 and 1999, while African Americans and Native Americans also increased.

OFM projects that this trend of racial/ethnic minorities becoming an increasingly larger proportion of total population will continue.

Recent Trends in Minority Public Higher Education Enrollment

The trend in minority enrollment has mirrored the trend described above for the general population. Over the last several years the number of minority students enrolled, in both absolute numbers and as a percentage of the total, has increased at the public two- and four-year institutions. The **percentage** of total enrollment represented by each minority group has increased, while the percentage of white/Caucasian enrollment has decreased. However, it should be noted that those students coded as "unknown" have also increased substantially. This limits the ability to draw conclusions from the data.

**Public Four-Year
Race/Ethnicity: Percent of Total Fall Enrollment
1990 compared to 1999**

| Public 4-year | Non-res Alien | Black | Native Amer. | Asian/ Pacific | Hisp | White | Unkwn | Total |
|------------------|------------------|-------|-----------------|-------------------|-------|--------|-------|--------|
| 1990 Hdct | 3,402 | 1,775 | 956 | 6,298 | 1,667 | 65,366 | 1,937 | 81,401 |
| 1990 % | 4.2% | 2.2% | 1.2% | 7.7% | 2.0% | 80.3% | 2.4% | |
| | | | | | | | | |
| 1999 Hdct | 3,866 | 2,188 | 1,581 | 9,657 | 3,163 | 63,633 | 7,455 | 91,543 |

**Public Two-Year
Race/Ethnicity: Percent of Total Fall Enrollment
1990 compared to 1999**

| Public 2-year | Non-res Alien | Black | Native Amer. | Asian/Pacific | Hisp | White | Unkwn | Total |
|---------------|---------------|-------|--------------|---------------|--------|---------|--------|---------|
| 1990 Hdct | 443 | 3,323 | 2,112 | 8,766 | 4,730 | 104,134 | 11,271 | 134,779 |
| 1990 % | .3% | 2.5% | 1.6% | 6.5% | 3.5% | 77.2% | 8.4% | |
| | | | | | | | | |
| 1999 Hdct | 388 | 7,438 | 3,125 | 14,888 | 13,619 | 123,989 | 18,295 | 181,742 |
| 1999 % | .2% | 4.1% | 1.7% | 8.2% | 7.5% | 68.2% | 10.1% | |

Data Source: SBCTC (state-supported enrollment only)

Participation Rates By Race/Ethnicity

It is also instructive to compare minority enrollment to the population of race/ethnic groups; i.e., the participation rate of each race/ethnic group. A recent study by the HECB looked at data on enrollment (and other factors) for people of color during the late 1990s¹². Due to data limitations, enrollment was compared to the state's population age 17 and above in each racial/ethnic group because enrollment by race, by single year of age (or age groupings) was not available. The participation of minority groups was compared to the overall participation rate. Again, this was measured by total enrollment compared to total population age 17 and above – which is used as the **benchmark**. Participation rates for each minority group were then calculated and compared to the benchmark.

At public four-year institutions, the study shows that the undergraduate groups composed of Asian and Pacific Islanders and Native Americans exceeds the overall benchmark, while African-American and Hispanic are below the benchmark. At the public two-year institutions, all minority groups are above the benchmark for the undergraduate level. Total enrollment at the community colleges is much higher than undergraduate enrollment at the four-year institutions. Therefore, **overall, current data for undergraduate enrollment suggest that minority groups attend college at higher rates than the general population**. At the graduate level, however, only one group – Asian/Pacific Islanders – is above the benchmark.

Implications for Future Enrollment Levels

Over the next decade, public higher education enrollment is expected to steadily increase, and there is no reason to believe the proportion of minorities should reverse the current trend and begin to grow slower than the benchmark. Rather, it seems the current trend will continue with the state's population growing and the proportional representation of minority groups in the population also growing. Again, data are insufficient to predict with certainty how many students would enroll **if** race/ethnicity could be incorporated into enrollment forecasts as a variable.

¹² See "Diversity and Participation of People of Color in Higher Education," December, 1999.

However, it seems likely that these factors may contribute to an even higher 2010 enrollment than that predicted by OFM's baseline calculations using variables of age and gender only. The following table displays draft calculations based on currently available data. Although the calculations can be revised when more updated information becomes available, preliminary estimates suggest that roughly ten thousand additional FTEs will be needed beyond the baseline projection in the Master Plan to maintain the current level of opportunity in the public two- and four-year higher education institutions by 2010.

PRELIMINARY ENROLLMENT PROJECTIONS USING 1992 POPULATION ESTIMATES

ENROLLMENT PROJECTIONS USING RACE/ETHNICITY

Public 4-Yr Headcount: 1998

| | African Am. | Native Amer | Asian/Pac | Hispanic | White | Other/Unknown data spread across race/eth | Total |
|-----------|-------------|-------------|-----------|----------|--------|---|--------|
| Lower | 972 | 661 | 4,123 | 1,288 | 24,642 | | 31,685 |
| Upper | 1,134 | 979 | 5,213 | 1,801 | 33,407 | | 42,534 |
| Grad/Prof | 421 | 264 | 1,519 | 629 | 13,137 | | 15,970 |
| TOTAL | 2,526 | 1,904 | 10,855 | 3,717 | 71,186 | | 90,189 |

source: IPEDS

POPULATION by RACE/ETHNICITY: 1998 (source: OFM)

AGES 17 AND ABOVE

| | | | | | |
|---------|--------|---------|---------|-----------|-----------|
| 124,746 | 62,753 | 228,965 | 207,912 | 3,621,448 | 4,245,824 |
|---------|--------|---------|---------|-----------|-----------|

1998 PARTICIPATION RATE: based on special OFM population calculation (Hisp. separate)

| PUB 4-YR | African Am | Native Am | Asian/Pac | Hisp | White | Total |
|-----------|------------|-----------|-----------|--------|--------|--------|
| Lower | 0.0078 | 0.0105 | 0.0180 | 0.0062 | 0.0068 | 0.0075 |
| Upper | 0.0091 | 0.0156 | 0.0228 | 0.0087 | 0.0092 | 0.0100 |
| Grad/Prof | 0.0034 | 0.0042 | 0.0066 | 0.0030 | 0.0036 | 0.0038 |
| TOTAL | 0.0203 | 0.0303 | 0.0474 | 0.0179 | 0.0197 | 0.0212 |

2010 projections:source 1992 population projections (OFM) Hispanic not discrete -some double counted

POPULATION: 17 AND ABOVE (15-19 range factored)

| | African Am | Native Am | Asian/Pac | Hisp | White | Duplicated Total | Unduplicated Total |
|---|------------|-----------|-----------|---------|-----------|----------------------------|-----------------------|
| NOTE: DATA FACTORED TO 1999 OFM Proj | 174,809 | 94,718 | 396,029 | 339,001 | 4,044,605 | 5,049,162 | 4,852,640 |
| | 0.03 | 0.02 | 0.08 | 0.07 | 0.80 | factor based on dupl count | |
| | 176,102 | 95,419 | 398,959 | 341,510 | 4,074,531 | n/a | 5,086,521 |

2010 PUBLIC 4-YEAR: PROJECTED BASED ON MAINTAINING CURRENT PART. RATE HEADCOUNTS

| | African Am | Native Am | Asian/Pac | Hisp | White | | |
|-----------|------------|-----------|-----------|-------|--------|---------|---------|
| Lower | 1,372 | 1,004 | 7,184 | 2,115 | 27,725 | 39,400 | 37,959 |
| Upper | 1,600 | 1,489 | 9,083 | 2,958 | 37,587 | 52,718 | 50,956 |
| Grad/Prof | 594 | 402 | 2,647 | 1,032 | 14,781 | 19,456 | 19,132 |
| TOTAL | 3,566 | 2,896 | 18,915 | 6,106 | 80,092 | 111,574 | 108,047 |

TOT: race/eth

FTE CONVERSION (OFM, 3-YEAR AVERAGE)

0.914944

FTE: FOUR-YEAR AT 2010 BASED ON RACE/ETHNICITY

FTE

102,084

FTE difference:

FTE: FOUR-YEAR AT 2010 BASELINE

99,751

2,333

1998 ENROLLMENT AT COMMUNITY/TECHNICAL (STATE SUPPORTED)

| | African Am. | Native Amer | Asian/Pac | Hispanic | White | Other/Unknown data spread across race/eth | Total |
|-----|-------------|-------------|-----------|----------|---------|---|---------|
| CTC | 7,871 | 3,647 | 16,263 | 14,054 | 135,430 | | 177,265 |

Source: SBCTC, MIS report

POPULATION: 1998

AGES 17 AND ABOVE

| | | | | | |
|---------|--------|---------|---------|-----------|-----------|
| 124,746 | 62,753 | 228,965 | 207,912 | 3,621,448 | 4,245,824 |
|---------|--------|---------|---------|-----------|-----------|

1998 PARTICIPATION RATE: based on special OFM population calculation (Hisp. separate)

| | African Am | Native Am | Asian/Pac | Hisp | White | Total |
|-----|------------|-----------|-----------|--------|--------|--------|
| CTC | 0.0631 | 0.0581 | 0.0710 | 0.0676 | 0.0374 | 0.0418 |

2010 projections:source 1992 population projections (OFM) Hispanic not discrete -some double counted

POPULATION: 17 AND ABOVE (15-19 range factored)

| | African Am | Native Am | Asian/Pac | Hisp | White | Total |
|-------------------------------|------------|-----------|-----------|---------|-----------|-----------|
| Factored to OFM 1999 proj. | 176,102 | 95,419 | 398,959 | 341,510 | 4,074,531 | 5,086,521 |

2010 PUBLIC 2-YEAR: PROJECTED BASED ON MAINTAINING CURRENT PART

| | African Am | Native Am | Asian/Pac | Hisp | White | TOTAL BASED on race/ethnicity | HEADCOUNT Total |
|-----|------------|-----------|-----------|--------|---------|-------------------------------------|--------------------|
| CTC | 11,112 | 5,546 | 28,338 | 23,084 | 152,373 | 220,453 | 212,364 |

FTE CONVERSION (OFM, 3-YEAR AVERAGE)

0.690222

FTE: TWO-YEAR AT 2010 BASED ON RACE/ETHNICITY

FTE

152,161

FTE difference:

FTE: TWO-YEAR AT 2010 BASELINE

144,253

7,908

Analysis of Future Freshmen Enrollments

The discussion presented above relates to future total enrollments using race/ethnicity. A major subset of these students is first-time freshmen that have recently graduated from high school. Therefore, it is useful to look at the current racial/ethnic composition of high school graduates, and changes predicted over the next decade, to enlighten the analysis of the future make-up of first-time college freshmen.

A larger proportion of high school graduates is projected to be racial/ethnic minorities. The Western Interstate Commission for Higher Education (WICHE) – *Knocking at the College Door, 1998* – projects that the “White non-Latino” portion will be 68 percent of public high school graduates in 2010 in Washington State. Today, that group comprises 79 percent of public high school graduates. This projection supports OFM’s population forecasts that indicate minority groups will comprise a larger proportion of the public high school graduating class in 2010 than is now the case. If the same percentage of each minority group enrolls in college in 2010 as now, the numbers of entering freshmen will be larger than that predicted using standard calculations. As an example, the University of Washington, using estimates based on race/ethnicity, anticipates that by 2010, there will be a 35 percent increase in the number of freshmen who are in-state residents – with the largest increases occurring among racial/ethnic minorities. This calculation is based on maintaining the 1998 rates at which freshmen enroll, compared to the number of high school graduates in the state (based on race/ethnicity) who enter UW. [Source: data provided by Tim Washburn, 11/22/98]

Overall, all the data and analysis suggest that factoring in the changing racial/ethnic mix of the population, (if enrollment rates and behavior continue as they are today) would increase the estimates of future enrollments above baseline calculations using only age and gender. Whether or not larger numbers of students materialize by 2010 will depend on many influences that lead to individual student decisions and abilities to participate in higher education.

Regional Mix of Students

Another demographic variable that may influence college-going behavior is geography. We do know that residents in some parts of Washington State are more likely to enroll in college than those from other parts of the state. So, as state population increases, it will be useful to see if different regions are expected to grow at different rates – and whether this may have an effect on expected enrollment levels. Also, embedded in “location” may be other factors such as proximity to a college/university, or a differential influence due to urban compared to rural environments.

In order to examine regional differences and potential effects on 2010 enrollments, data at the county level could be used. A comparison of college-going rates among counties shows significant differences. However, whether different rates result in large differences in numbers of students depends largely on the size of the county populations. And, in fact, three large counties (King, Pierce, and Snohomish) account for nearly half the enrollment at the public colleges and universities.

For comparison purposes, calculations were done to assess whether county participation rates would make a significant difference in the overall enrollment projections. This comparison was completed using OFM's calculations of county public higher education participation rates; and population projections by county, by age, produced in 1995. HECB staff applied the current county participation rates to projected population (age 17 and above) to produce estimates by county for the future – assuming county participation rates do not change significantly.

Implication For Future Enrollment Levels

Although some differences were found between the baseline calculation and calculations using county-level data, these differences are minimal. In general, by 2010 four-year public institutions show a slightly lower enrollment, while two-year institutions show a slightly higher enrollment compared to the baseline. Overall, the combined two- and four-year difference between the baseline and county-level projections is only a few hundred FTEs. This is not a significant effect. We should also recognize that any projections based on age and gender (i.e., the baseline) already incorporate the current behaviors of students in all regions of the state. Therefore, additional calculations disaggregated by county (or region) may only compound effects already incorporated in the baseline.

A note of caution here is appropriate. OFM's most recent population projections by county, by age, were completed in 1995, and the total for all counties differs from the current total population forecast (higher) by 52,000. Furthermore, available data limits calculations by age to the entire population age 17 and above; disaggregations of enrollment by individual year of age, by county, are not available. Without a more refined methodology (data that is currently unavailable), projections by county can only be considered as "ballpark." It should also be noted that non-resident students (both foreign and out-of-state) are implicitly assumed to increase at the same rate as the total state population increases. That is, their enrollment patterns will also remain relatively constant. Whether or not non-resident enrollment remains proportional to its current configuration is unknown. Still, the calculations that can be made seem to indicate that the regional mix of students may not be a major factor affecting enrollment levels. The following table illustrates preliminary calculations using county participation rates.

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PROJECTIONS OF ENROLLMENT BASED ON COUNTY PARTICIPATION RATES

| COUNTY: | Participation Rate: Washington Residents only | POPULATION PROJ. ENROLLMENT PROJ. |
|---------------|---|-----------------------------------|
| | 1998 1997 1998--4 yr 1997--2 yr 17 AND ABOVE TO 2010 | |
| | 4-year 2-year current current WASHINGTON (based on current part rate) | |
| | public public total total source: OFM 1995 projections | |
| | total enr. total enr. enrollment enrollment 17 & above: Public Public | |
| | part. rate part. rate in-state in-state 2010 4-year 2-year | |
| Adams | 0.0189 0.0411 203 436 12,747 241 524 | |
| Asotin | 0.0134 0.0302 197 437 17,200 230 519 | |
| Benton | 0.0272 0.0430 2,672 4,108 120,960 3,290 5,201 | |
| Chelan | 0.0192 0.0420 877 1,902 56,353 1,082 2,367 | |
| Clallam | 0.0125 0.0384 649 1,982 61,001 763 2,342 | |
| Clark | 0.0122 0.0336 2,907 7,725 284,250 3,468 9,551 | |
| Columbia | 0.0167 0.0455 54 147 3,481 58 158 | |
| Cowlitz | 0.0129 0.0420 897 2,868 85,921 1,108 3,609 | |
| Douglas | 0.0152 0.0053 354 120 29,887 454 158 | |
| Ferry | 0.0172 0.0634 91 334 6,596 113 418 | |
| Franklin | 0.0162 0.0513 481 1,506 38,965 631 1,999 | |
| Garfield | 0.0249 0.0383 45 69 1,919 48 73 | |
| Grant | 0.0173 0.0353 848 1,702 63,659 1,101 2,247 | |
| Grays Harbor | 0.0131 0.0482 659 2,439 58,888 771 2,838 | |
| Island | 0.0109 0.0334 594 1,804 71,743 782 2,396 | |
| Jefferson | 0.0120 0.0269 250 554 29,158 350 784 | |
| King | 0.0202 0.0412 25,906 52,122 1,455,752 29,406 59,977 | |
| Kitsap | 0.0155 0.0301 2,586 5,023 214,797 3,329 6,465 | |
| Kittitas | 0.0421 0.0083 1,043 206 28,708 1,209 238 | |
| Klickitat | 0.0125 0.0118 176 164 16,971 212 200 | |
| Lewis | 0.0128 0.0505 644 2,525 60,552 775 3,058 | |
| Lincoln | 0.0245 0.0167 185 123 8,528 209 142 | |
| Mason | 0.0101 0.0286 368 1,036 45,710 462 1,307 | |
| Okanogan | 0.0154 0.0239 428 662 32,746 504 783 | |
| Pacific | 0.0085 0.0222 143 368 19,980 170 444 | |
| Pend O'reille | 0.0175 0.0342 144 280 10,438 183 357 | |
| Pierce | 0.0130 0.0393 6,602 19,512 616,017 8,008 24,209 | |
| San Juan | 0.0140 0.0324 140 320 13,866 194 449 | |
| Skagit | 0.0135 0.0426 995 3,067 95,559 1,290 4,071 | |
| Skamania | 0.0120 0.0110 87 79 8,741 105 96 | |
| Snohomish | 0.0137 0.0398 5,688 15,999 549,355 7,526 21,864 | |
| Spokane | 0.0229 0.0427 7,030 13,060 368,470 8,438 15,734 | |
| Stevens | 0.0178 0.0218 482 585 34,845 620 760 | |
| Thurston | 0.0215 0.0366 3,211 5,382 205,892 4,427 7,536 | |
| Wahkiakum | 0.0094 0.0151 28 45 3,556 33 54 | |
| Walla Walla | 0.0143 0.0593 595 2,431 48,023 687 2,848 | |
| Whatcom | 0.0197 0.0594 2,331 6,954 148,128 2,918 8,799 | |
| Whitman | 0.0366 0.0065 1,236 219 35,754 1,309 232 | |
| Yakima | 0.0158 0.0323 2,344 4,741 173,758 2,745 5,612 | |
| STATE | 0.0175 0.0390 74,170 163,036 5,138,872 89,251 200,423 | |

Shaded = below state average

Out-of-State

| | | | | |
|------------|---------------|-----------|-------------|---------------|
| based on | enrl: | enrl: | population: | Headcount: |
| total pop | 14,687 | 8,686 | 17 & above: | ou-of-state |
| | total pop 17+ | | 2010 | |
| | 4,245,331 | 4,176,014 | | |
| part rate: | 0.00346 | 0.00208 | 5,138,872 | 17,778 10,689 |

TOTAL 2010 ENROLLMENT PROJECTIONS INCLUDING OUT-OF-STATE: **Pub 4-yr 107,029 Pub 2-yr 211,111**

FTE Conversion: factors based on OFM 3-year averages 0.914944 0.690222
FTE: Projections based on county participation rates 97,926 145,714
FTE: Baseline Projections (as a comparison) 99,751 144,253
difference: (1,825) 1,461

Impact of Immigration

A growing number of immigrants need English as a Second Language (ESL) instruction. SBCTC estimates that ESL growth averages 500 to 1000 per year. Baseline enrollment calculations in the Master Plan include an estimate of approximately 2,000 additional ESL student FTEs between 2000 and 2010 – only about 200 per year. [Source: e-mail communication from Loretta Seppanen.] Therefore, using the midpoint of the SBCTC expected increase, 750 per year an additional 5,500 FTE in excess of the baseline projection may need to be accommodated by 2010. This is calculated by subtracting the 2,000 FTE in the baseline projection from 7,500 – which is 750 new FTE per year for 10 years.

Family Income of Students

An important factor in estimating future college enrollment rates is the economic status of students and their families – which is commonly measured by looking at family income levels. Research confirms the intuitive conclusion that students with lower family incomes tend to participate in college at a lower rate than those with higher family income. (See, for example, Postsecondary Education Opportunity, April 2000.)

Several variables can help define “family income” status: per capita personal income, median family income, median household income, average wage, poverty status, etc. Data representing the entire state appear to indicate that, overall, family income levels have improved in recent years. For example, between 1993 and 1997, per capita personal income (PCPI) increased statewide by 20 percent; in 1997 average PCPI was \$26,451 for Washington [ESD website]. Median household income in 1998 was \$40,707 [ESD website]. The average hourly wage for the state was \$18 in 1997 [ESD, *The Washington Wage Report*, website]. The average unemployment rate in Washington (3-year average of 1997, 1998, 1999) was only 4.8 percent [ESD website].

With statewide data, it might appear that most residents of Washington could afford the costs of college attendance. However, averages and medians often mask a more complicated picture. Other strategies can be used to disassemble statewide data. The first involves disaggregating and regrouping **statewide** data into ranges or percentiles. For example, the data below indicate the number of employed people in the state (calculated by FTEs) at various wage ranges.

FTE Jobs by Hourly Wage, State Total, 1997

| Hourly wage | # of FTE Jobs | Percent of Total |
|---------------|---------------|------------------|
| Less than \$8 | 350,506 | 18% |
| \$8 - \$12 | 440,457 | 23% |
| \$12 - \$16 | 358,282 | 18% |
| \$16 - \$24 | 434,224 | 22% |
| \$24+ | 368,521 | 19% |
| Total | 1,951,991 | 100% |

Source: ESD, *The Washington Wage Report*, website

Although the average wage is \$18, at least 60% of jobs pay less than the average.

The Employment Security Department (ESD) has also looked at wages by deciles for the state. The following data compare payrolls by decile, along with the total portion of the payroll “pie” earned by each decile – in 1990 and 1997.

Percent of Total Payroll Paid, by Decile

| Decile | 1990 | 1997 |
|-----------------------------------|-------------|-------------|
| Top 10% of Jobs | 26.5 | 29.9 |
| Next 10% (2 nd decile) | 14.8 | 14.6 |
| 3 rd decile | 12.3 | 11.8 |
| 4 th decile | 10.3 | 9.8 |
| 5 th decile | 8.8 | 8.4 |
| 6 th decile | 7.5 | 7.2 |
| 7 th decile | 6.5 | 6.1 |
| 8 th decile | 5.5 | 5.1 |
| 9 th decile | 4.5 | 4.2 |
| Bottom 10% | 3.4 | 3.0 |

Source: ESD, *The Washington Wage Report*, website

At each decile, except the top 10 percent, the portion of the total earning “pie” in 1997 was less than in 1990. And, the top 10 percent earn nearly 30 percent of the pie compared to the bottom 10 percent, which earn only 3 percent of the pie.

Similarly, the dollar earnings in each decile had a higher maximum in 1997 compared to 1990, but the increase was greater for the top decile, as shown in the chart below.

Changes in Decile Earnings (hourly wages) – 1990-97

| Percentile | 1990 | 1997 | Change | Growth |
|-------------------|-------------|-------------|---------------|---------------|
| 10 th | \$ 6.59 | \$ 6.68 | \$ 0.09 | 1% |
| 20 th | 8.24 | 8.30 | 0.06 | 1% |
| 30 th | 9.89 | 10.01 | 0.12 | 1% |
| 40 th | 11.62 | 11.90 | 0.28 | 2% |
| Median | 13.54 | 13.96 | 0.42 | 3% |
| 60 th | 15.88 | 16.29 | 0.41 | 3% |
| 70 th | 18.66 | 19.29 | 0.63 | 3% |
| 80 th | 22.17 | 23.43 | 1.26 | 6% |
| 90 th | 27.67 | 29.72 | 2.05 | 7% |

Source: ESD, *The Washington Wage Report*, website

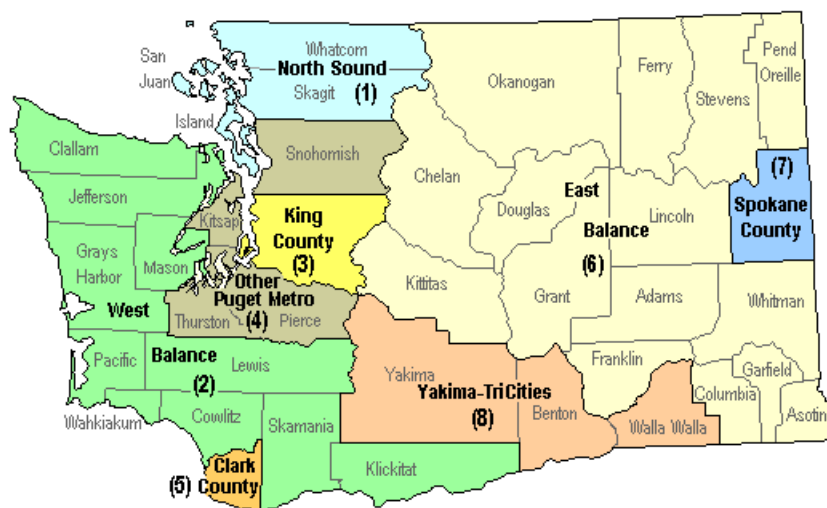
As an example, earnings in the highest decile (90th percentile) increased 7 percent from 1990 to 1997; earnings in the lowest decile increased only 1 percent in that time period (\$6.59 to \$6.68).

Another element of the ESD study looked at hourly wages between 1990 and 1997. Data were available on 700,000 individual workers who were employed full-time in both years. Although most of these individual workers earned a higher hourly wage in 1997 than in 1990, about 23 percent saw a drop in hourly earnings during that span¹³.

In addition to statewide variations, there are **regional** variations in income. On average, the Puget Sound region and Clark County have higher incomes, and lower poverty rates, than other parts of the state. Again, averages by region mask differences within. Many individuals in Puget Sound have very low incomes, and there are at least a few wealthy individuals in every region of the state. The map below displays the regions of the state and income indicators for each region. The table following the map shows the growth trends in each county, along with indicators of change over time in personal income and wages. It is instructive to note that several counties with higher than average population increases also have little or no growth in personal income and wages.

Regional Indicators of Family Income

Using the 1998 Washington State population survey, OFM examined several variables that may be useful in this analysis. The state was divided into eight regions, as displayed in the map below. Regional differences for three variables – reflecting household income and poverty – are described following the map.



¹³ Source: ESD, *The Washington Wage Report*, website.

| Region | Median Household Income | % Households with Income < \$15,000 | Percent of Families in Poverty |
|-------------------|--------------------------------|---|---------------------------------------|
| North Sound | 36,000 | 16.0 | 10.8 |
| West Balance | 33,633 | 15.5 | 14.0 |
| King County | 49,000 | 7.7 | 8.8 |
| Other Puget Metro | 45,000 | 10.7 | 11.0 |
| Clark County | 43,879 | 10.2 | 10.2 |
| East Balance | 30,000 | 23.0 | 22.1 |
| Spokane County | 35,303 | 15.4 | 13.1 |
| Yakima-Tri-Cities | 35,000 | 14.6 | 17.2 |
| STATE AVERAGE | 40,707 | 12.0 | 11.9 |

Source: OFM forecasting, website

Poverty: \$16,400 (family of 4)

In general, King County, Other Puget Metro, and Clark County have positive indicators compared to the state average. Other regions (note shaded areas), particularly the east and west sides of the state, do not fare as well.

Data Limitations

Data availability is a barrier to quantifying future income levels of the population, and, hence, quantifying future higher education enrollment impacts due to income. Ideally, variables of age, gender, race/ethnicity, and income are needed for each currently enrolled student to make projections of enrollment to 2010. This would allow consideration of the major future characteristics of the state's population. Since this level of detail in projections for the future is not available, general trends have been noted (above), and potential effects on future enrollment are noted below.

Implications For Future Enrollment Levels

There is no evidence that the past trend of widening income disparities will stop in the near future, so, it is also likely that these disparities will continue and be reflected in the future pool of students (and their families) who wish to access higher education. That is, the pool of citizens who want higher education may be composed of more low-income students than is currently the case.

Research shows that current participation in higher education is closely correlated with family income. Data from the U.S. Census indicate that, over the past 25 years, postsecondary enrollment of 18- to 24-year-old high school graduates has increased. However, low-income 18- to 24-year-olds attend college at much lower rates than those with high income, and participation gaps between high- and low-income students are about as wide today as they were in 1972. Specifically, in 1996, 85 percent of high school graduates (age 18–24) with incomes over \$71,801 (in the highest income quartile) participated in college. Conversely, 54 percent of those with incomes below \$24,589 (in the lowest income quartile) participated in college¹⁴. Furthermore, it is instructive to examine the implications of future enrollment based on the composition/

¹⁴ Source: Mortenson, 1998, cited in Financing a College Education, J.E. King, ed., 1999.

characteristics of the state's future population. As noted earlier in this paper, the numbers and proportions of people of color in Washington's population are increasing. According to national research, children of color are much less likely than their white counterparts to obtain baccalaureate degrees¹⁵. Those who do enroll are more likely to come from lower-income families, and therefore require financial assistance in order to attend. This is true in Washington State, as well as nationally. During the 1998-99 academic year, 29 percent of the students of color who attended public institutions in Washington received financial aid and had a family income of 65 percent or less of the state's median family income, compared to 23 percent of the non-minority population. Families with incomes below 65 percent of the state's median are expected to be able to contribute little or nothing to their child(ren)'s education. [Source: data calculations using HECB financial aid data.]

Availability of Financial Assistance

As trends indicate, the state's future population – and future potential enrollees in higher education – may tend to be more heavily low-income. Currently, state financial aid (particularly State Need Grant) provides assistance to those whose income is at 65% (or below) the state's median family income. If larger numbers of students in the future qualify for financial assistance, the state is expected to increase its funding of this important source of support to keep pace with the needs of Washington citizens. In this analysis of future enrollment levels, the following assumption is utilized:

Any possible reduction in enrollment due to affordability problems for increasing numbers of low-income people is expected to be averted by increases in state appropriations (or other types of financial assistance) to maintain the current level of accessibility now provided to low-income students.

Another way to state this is that we assume the state will “hold armless” its low-income citizens when it comes to access to higher education. If an increasing proportion of families become eligible for need-based assistance, it is assumed that the assistance will be provided.

Summary of Demographic/Behavioral Variables – General Implications

Demographics – particularly the major variables of age and gender – have an overwhelming influence on future projections of higher education enrollment levels. Other demographic variables such as race, income, and geography, may help to modify those projections, or suggest cautions in the interpretation of the baseline calculations. However, current participation rate projections (as calculated by OFM using single year of age and gender) continue to encompass the most significant factors. Based on the analysis of available data, it is possible to anticipate upward pressure on the enrollment forecast from a continuation of current trends in college-attendance rates by minority students and a continuation of immigration. The changing regional mix of students does not seem to have a major effect, and an assumption is made that any increase in the proportion of low-income families in the population will trigger a corresponding increase in the state's financial aid programs.

¹⁵ Postsecondary Education Opportunity, Number 94, April 2000.